

## IMAGE FORMING DEVICE

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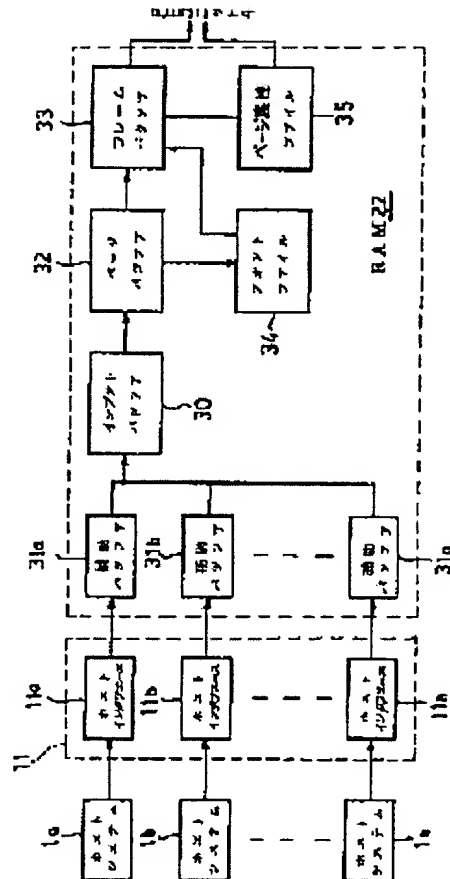
Application number: JP19910229173 19910909

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### Abstract of JP5064925

**PURPOSE:**To enable each job image-formed paper to be simply classified by a method wherein wasteful use of an image forming device and resources is removed by reversing a data direction in which printing is outputted every time end of each job in which an image received from a host system is to be formed is detected. **CONSTITUTION:**Every time end of each job to be printed which is received from a host system is detected, its flag is switched so as to indicate regular direction output or reverse direction output. Besides, when a page data is formed in a page buffer 32, whether it is a page to be outputted in a regular direction or a page to be outputted in a reverse direction according to the flag is registered in a page attribute file 35. Then, whether it is the page of a regular direction output mode or of a reverse direction output mode is determined by examining the attribute file 35 prior to execution of printing process. Since a direction of an image on paper to be outputted by printing becomes reverse with every job, its classification thereafter can be easily performed.



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[Back to JP5064925](#)

**1 IMAGE FORMING DEVICE**

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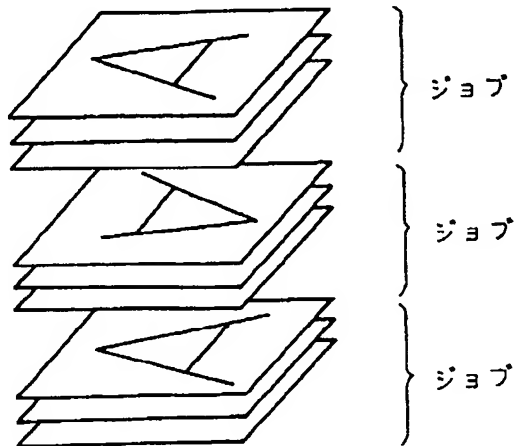
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(54)【発明の名称】 画像形成装置

(57)【要約】

【目的】 画像形成装置のコストアップや資源をムダ使いすることなく、各ジョブの画像形成済用紙の仕分けを簡単に行なえるようにする。

【構成】 ホストから受信するプリントすべき各ジョブの終了を検出する毎に印字出力するデータの方向を反転する。あるいは、印刷手段とは別にマーキング手段を設けて、画像形成済用紙に各ジョブ毎に交互に(1ジョブおきに)マーキングを施したり、各ジョブ毎に異なる位置にマーキングを施したり、各ジョブ毎に異なる色でマーキングを施したり、各ジョブ毎にマーキングの太さあるいは本数を異ならせたり、それらをジョブ区切り要因に応じて選択したりする。



## 【特許請求の範囲】

【請求項1】 ホストから受信する画像形成すべき各ジョブの終了を検出する検出手段と、該手段がジョブの終了を検出する毎に印字出力するデータの方法を反転する手段とを備えたことを特徴とする画像形成装置。

【請求項2】 カット紙に画像形成する画像形成装置において、画像形成が済んだ用紙の一部にマーキングするマーキング手段と、画像形成すべきジョブの区切りを判定するジョブ区切り判定手段と、該手段によってジョブの区切りと判定される毎に、前記マーキング手段によるマーキング動作を開始あるいは停止に切り替えるマーキング切替手段とを備えたことを特徴とする画像形成装置。

【請求項3】 カット紙に画像形成する画像形成装置において、画像形成が済んだ用紙の一部にマーキングするマーキング手段と、画像形成すべきジョブの区切りを判定するジョブ区切り判定手段と、該手段によってジョブの区切りと判定される毎に、前記マーキング手段によるマーキング位置を変更するマーキング位置変更手段とを備えたことを特徴とする画像形成装置。

【請求項4】 カット紙に画像形成する画像形成装置において、画像形成が済んだ用紙の一部にマーキングするマーキング手段と、画像形成すべきジョブの区切りを判定するジョブ区切り判定手段と、該手段によってジョブの区切りと判定される毎に、前記マーキング手段によるマーキングカラーを変更するマーキングカラー変更手段とを備えたことを特徴とする画像形成装置。

【請求項5】 カット紙に画像形成する画像形成装置において、画像形成が済んだ用紙の一部にマーキングするマーキング手段と、画像形成すべきジョブの区切りを判定するジョブ区切り判定手段と、該手段によってジョブの区切りと判定される毎に、前記マーキング手段によってマーキングされるマーカの太さあるいはマーキングの本数を変更する手段とを備えたことを特徴とする画像形成装置。

【請求項6】 複数種のジョブ仕分け手段と、画像形成すべきジョブの区切りを判定するジョブ区切り判定手段と、該手段が判定に用いる複数種のジョブ区切り要因を識別するジョブ区切り要因識別手段と、前記ジョブ区切り判定手段によってジョブの区切りと判定される毎に、前記複数種のジョブ仕分け手段のうち前記ジョブ区切り要因識別手段によって識別されたジョブ区切り要因に対応するジョブ仕分け手段を選択して作動させるジョブ仕分け選択手段とを備えたことを特徴とする画像形成装置。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 この発明はレーザプリンタ等の各種プリンタ、複写機、ファクシミリ装置等の画像形成装置に関する。

## 【0002】

【従来の技術】 レーザプリンタ等の画像形成装置においては、複数の排紙トレイ装置（多段排紙装置）やジョガー装置を設け、画像形成すべき各ジョブ毎に排紙位置を変更してその各ジョブの仕分けを行なえるようにしたもののが一般に知られているが、複数の排紙トレイ装置やジョガー装置を設けることによって装置の大型化やコストアップを招くなどの欠点があったため、それを解消するために例えば以下の（1）～（4）に示すような提案がなされている。

【0003】（1）ジョブの印字結果出力が終了したことを検出する手段を有し、この検出手段により各ジョブの印字結果出力の終了が検出される毎に未印字の用紙を挿入する（特開平2-48363号公報）。

（2）n個のホストとm個のプリンタ装置とが相互に接続されてホストからのデータを印字するように構成されたシステムにおいて、ホストとプリンタの接続ルートを示す仕分けマーク情報（マーキングデータ）を発生して印字データと共に印字する（特開昭62-169227号公報）。

【0004】（3）複数のホストI/Fからの入力に応じたオフセット位置に印字出力部（排紙部）を搬送方向と直行して移動させる（特開平2-19913号公報）。

（4）仕分けの切替えに応じて給排紙方向を縦横90度交互に変更する（特開平2-95873号公報）

## 【0005】

【発明が解決しようとする課題】 しかしながら、上述の（1）～（4）に挙げたような画像形成装置では次のような問題があった。

【0006】（1）の画像形成装置では、各ジョブ間に用紙を挿入するため資源のムダ使いであり、極端な例として1ページだけのジョブが連続する様な場合には、かえって仕分けがしにくくなり、スループットも低下してしまう。

（2）の画像形成装置では、ホストと画像形成装置の経路に関しての仕分けしかできない。また、印字方式が同一なため、仕分けマーク情報が印刷された他の情報と区別しにくく、且つその仕分けマーク情報を紙の端に印字することが難しく、重ねた時に仕分けマークが見えない。

【0007】（3）の画像形成装置では、積載状態を崩すと意味がなく、風や振動に弱い。また、構造的にコストがかかり、排紙部移動スペースが余分に必要になる。さらに、仕分け間隔が仕分け位置の誤差に影響され易いため、細かく仕分けしにくい。

（4）の画像形成装置では、縦横各々の方向に印字できる印字手段と、給紙方向に応じた印字方向選択手段が必要で、特に前者のソフトまたはハードの構成が複雑になる。

【0008】この発明は上記の点に鑑みてなされたものであり、画像形成装置のコストアップや資源をムダ使いすることなく、各ジョブ画像形成済用紙の仕分けを簡単に行なえるようにすることを目的とする。

【0009】

【課題を解決するための手段】この発明は上記の目的を達成するため、ホストから受信する画像形成すべき各ジョブの終了を検出する検出手段と、該手段がジョブの終了を検出する毎に印字出力するデータの方

向を反転する手段とを備えた画像形成装置を提供する。

【0010】また、カット紙に画像形成する画像形成装置において、画像形成が済んだ用紙の一部にマーキングするマーキング手段と、画像形成すべきジョブの区切りを判定するジョブ区切り判定手段と、該手段によってジョブの区切りと判定される毎に、マーキング手段によるマーキング動作を開始あるいは停止に切り替えるマーキング切替手段とを備えた画像形成装置も提供する。

【0011】なお、マーキング切替手段の代わりに、以下の(1)～(3)のいずれかを備えてもよい。

(1) ジョブ区切り判定手段によってジョブの区切りと判定される毎に、マーキング手段によるマーキング位置を変更するマーキング位置変更手段。

(2) ジョブ区切り判定手段によってジョブの区切りと判定される毎に、マーキング手段によるマーキングカラーを変更するマーキングカラー変更手段。

(3) ジョブ区切り判定手段によってジョブの区切りと判定される毎に、マーキング手段によってマーキングされるマーカの太さあるいはマーキングの本数を変更する手段。

【0012】さらに、複数種のジョブ仕分け手段と、画像形成すべきジョブの区切りを判定するジョブ区切り判定手段と、該手段が判定に用いる複数種のジョブ区切り要因を識別するジョブ区切り要因識別手段と、ジョブ区切り判定手段によってジョブの区切りと判定される毎に、複数種のジョブ仕分け手段のうちジョブ区切り要因識別手段によって識別されたジョブ区切り要因に対応するジョブ仕分け手段を選択して作動させるジョブ仕分け選択手段とを備えた画像形成装置も提供する。

【0013】

【作用】請求項1の画像形成装置によれば、ホストから受信する画像形成すべき各ジョブの終了を検出する毎に印字出力するデータの方

向を反転するので、給紙トレイや排紙トレイが1つずつしかないような場合でも、コストアップや資源をムダ使いすることなく、各ジョブの仕分けを行なうことができる。

【0014】請求項2の画像形成装置によれば、画像形成すべきジョブの区切りを判定する毎に、マーキング手段によるマーキング動作を開始あるいは停止に切り替えるので、各ジョブ毎にマーキングされた用紙とマーキングされない用紙が交互に重なり、やはり各ジョブの仕

分けを低コストで実現することができる。特にマーキングを用紙の端縁の一部に施せば、各ジョブの用紙が重なった状態でも一見して見分けがつく。なお、ジョブ区切り判定手段によってジョブの区切りと判定される毎に、マーキング手段によるマーキング位置を変更するようにすれば、画像形成後のユーザによる仕分け作業が一層容易になる。

【0015】また、ジョブ区切り判定手段によってジョブの区切りと判定される毎に、マーキングカラーを変更するようにすれば、排紙されるカット紙の積み重ねが乱れても仕分けが明確に判る。さらに、ジョブ区切り判定手段によってジョブの区切りと判定される毎に、マーキング手段によってマーキングされるマーカの太さあるいはマーキングの本数を変更した場合でも、上述と同様な効果を得られる。

【0016】請求項6の画像形成装置によれば、ジョブ区切り判定手段が判定に用いる複数種のジョブ区切り要因を識別し、ジョブ区切り判定手段によってジョブの区切りと判定される毎に、複数種のジョブ仕分け手段のうち識別されたジョブ区切り要因に対応するジョブ仕分け手段を選択して作動させるので、画像形成後のユーザによる仕分けの作業性が飛躍的に向上する。

【0017】

【実施例】以下、この発明の実施例を図面に基づいて具体的に説明する。図2はこの発明をレーザプリンタに適用した第1実施例のシステム構成図であり、1a、1b、…1nは、外部装置であるパーソナルコンピュータ、ワードプロセッサ、データ処理装置、画像処理装置等のそれぞれ異なるホストシステムであり、2はその各ホストシステム1a、1b、…1nを接続したページプリンタであるレーザプリンタである。

【0018】レーザプリンタ2は、ホストシステム1a、1b、…1nのいずれかから文字コード情報や画像イメージ情報等の印字データを受けてページ単位でビデオデータを生成するプリンタコントローラ3と、そのビデオデータによって用紙(記録媒体)に文字や画像をプリントするための画像形成部とそのシーケンスコントローラ(エンジンドライバ)等からなるプリンタエンジン4とによって構成されている。

【0019】図3は、このプリンタコントローラ3の構成例を示すブロック図である。このプリンタコントローラ3は、外部インタフェース(インタフェース回路)として図2に示したホストシステム1a、1b、…1nと接続するためのホストインタフェース11と、内部インタフェース(インタフェース回路)としてフォントカートリッジ12と接続するためのカートリッジインタフェース14とICカード15と接続するためのICカードインタフェース16とコントロールパネル(操作パネル)17と接続するためのコントロールパネルインタフェース18とPEユニット(プリンタエンジン)4と接続するため

5

エンジンインタフェース19とを備えている。

【0020】また、コントローラ部としてCPU20、ROM21、RAM22と、データ制御部23、アドレス制御部24、ビデオ制御部25とを備えている。なお、ホストインタフェース11は、図4に示すように各ホストシステム1a、1b、…1nを接続するための通信機能を有する複数のホストインタフェース11a、11b、…11nによって構成されており、接続する各ホストシステムに合わせて各種のパラレルインタフェースあるいはシリアルインタフェース等が選択設定される。

【0021】そして、このホストインタフェース11はホストシステムからの文字コード情報や画像イメージ情報等の各種の印字データを受信したり、プリンタステータス等の制御情報をホストシステムへ送信したりする。また、このプリンタコントローラ3内の各部はアドレスバス、制御バス、データバスからなるバスラインによって相互に接続されている。

【0022】CPU20は、CPU、ROM、RAM及びI/O等からなる汎用の16ビット又は32ビットのマイクロコンピュータであり、このプリンタコントローラ全体の統括制御を司る。ROM21はリードオンリメモリであり、CPU20を制御するための各種プログラム、常駐フォント等を格納している。

【0023】RAM22は大容量のランダムアクセスメモリであり、図4に示すように全てのホストインタフェース11a、11b、…11nに共通なインプットバッファ30と、各ホストインタフェース11a、11b、…11nに対応する複数の補助バッファ31a、31b、…31nとしてのメモリ領域が割り当てられている。さらに、このRAM22はページバッファ32、フレームバッファ33、フォントファイル34、ページ属性ファイル35等を使用されると共に、CPU20が使用するシステムメモリ等にも使用される。

【0024】データ制御部23は、ページバッファ32のデータに基づき、フレームバッファ33上にビットマップデータ（ビデオデータ）を作成していく場合に使用される。アドレス制御部24は、ページバッファ32のデータに基づいてフレームバッファ33上にビットマップデータを作る場合のDMA(Direct Memory Access)アドレスを制御するDMAアドレス制御部と、フレームバッファ33に作られたビットマップデータをビデオクロック(WCLK)に同期させて順次出力していくためのビデオアドレス制御部等によって構成されている。

【0025】ビデオ制御部25は、フレームバッファ33上に作られたビットマップデータが、CPU20の処理単位である例えば32ビットずつ読み出された時、そのパラレルビットマップデータをシリアルビットマップデータに変換してPEユニット4に出力する。

【0026】次に、図4に示したRAM22上の各種バッファ及びファイルの構成に従って、それぞれの処理動

6

作を具体的に説明する。ホストインタフェース11a、11b、…11nのいずれかがホストシステムからデータを受信すると、その受信データをRAM22の対応する補助バッファに転送する。次いで、CPU20がその補助バッファからデータを取り出してインプットバッファ30に格納保持して、このレーザプリンタでのデータ処理速度とホストシステムからのデータ送信速度との調整を図るようにする。

【0027】次に、そのインプットバッファ30内に保持されているデータを取り出して、そのデータが文字コード情報（制御コードを含む）ならばページバッファ32に1文字毎における文字の種類、フォントの種類、ページ上の印字位置(X、Y座標)等のページレイアウト情報を格納する。

【0028】次に、ページバッファ32にデータが格納された時点で、フレームバッファ33に作成されるビットマップデータのレイアウトを上記制御コード及び印字位置情報によって決定し、その後その決定されたレイアウトに従って文字コードによる上記1文字毎の文字の種類とフォントの種類とに応じたフォントをフォントファイル34からDMAによって一括転送してビットマップデータを生成する。そして、そのビットマップデータとページ属性ファイル35に登録されている各ページの紙サイズ等の情報とをPEユニット4へ出力して印字動作を行なわせる。

【0029】次に、この発明に係わる部分について説明する。この実施例では、フレームバッファ33上に作成したビットマップデータの出力を図5の(イ)に示すように順方向に行なうモードと(ロ)に示すようにページの最後から逆方向に出力するモードを持つ。

【0030】まず、このモードを決定するためのフラグを用意する。そして、ホストシステムから受信するプリントすべき各ジョブの終了を検出する毎にそのフラグを順方向出力あるいは逆方向出力を示すように切り替えるようにする。一方、ページバッファ32でのページデータの作成時に、上記フラグに従って順方向出力するページであるか逆方向出力するページであるかをページ属性ファイル35に登録する。

【0031】そして、印字処理の実行に先立って、図6のフローチャートに示すように順方向出力モードのページか逆方向出力モードのページかをページ属性ファイル35を調べて決定し、その決定したモードの設定を行なう。それによって、印字出力される用紙は図1に示すように各ジョブ毎に画像の向きが反対になるので、その後の仕分け作業を簡単に行なえる。

【0032】なお、各ジョブの終了検出条件として次のような場合が考えられる。

- 1) 一定時間データを受信しない場合
- 2) ジョブ終了コマンド等を設け、そのコマンドを受信した場合

7

3) 選択されるホストインタフェースが切り替わった場合

【0033】このように、この実施例によれば、ホストシステムから受信するプリントすべき各ジョブの終了を検出する毎に印字出力するデータの方角を反転するので、給紙トレイや排紙トレイが1つずつしかないような場合でも、コストアップや資源をムダ使いすることなく、各ジョブの仕分けを容易に行なうことができる。

【0034】なお、この実施例ではビットマップデータを作成するまでは全てのページに対して同一でその出力の方角を変えるようにしたが、ビットマップデータの作成を逆方向から行なうようにしてもよい。また、この発明はレーザプリンタに限らず、液晶シャッタープリンタ、LEDプリンタ等の他のプリンタは勿論、複写機、ファクシミリ装置等の各種の画像形成装置に適用し得るものである。

【0035】図7は、この発明の第2実施例の構成を機能的に示すブロックである。給紙手段41は指定されたサイズのカット紙を1枚ずつ給紙し、搬送手段2が給紙手段41から給紙されたカット紙をマーキング手段43に向けて搬送し、その搬送中のカット紙に印刷手段44が画像を形成する。ジョブ区切り判定手段45は、例えば以下の(1)～(6)に示すような内外からのジョブ区切り要因を検知して画像形成すべきジョブの区切りを判定すると、その旨をマーキング切替手段46に伝える。

【0036】(1) 複数のホストに接続できるシステムの場合におけるデータ供給ホストの切り替え。

(2) コマンド、パネル操作、自動認識等によるプリンタ言語の変更(エミュレーション切り替え)。

(3) 複数枚コピー印刷モードにおけるページ毎あるいはコピー単位毎の区切り。

(4) 直接的ジョブ切り替えあるいはそれに近いレベルの処理に関するコマンドやパネルによる指示。

(5) 特定数居時間のプリンタアイドル状態の継続。

(6) その他。

【0037】マーキング切替手段46は、ジョブ区切り判定手段45によってジョブの区切りと判定されると、マーキング手段43の以前までのマーキングON/OFF状態を反対に切り替える。

【0038】マーキング手段43は、マーキング切替手段46によってON状態に切り替えられていれば、搬送手段2によって送られてくる画像形成されたカット紙の一部(好ましくは端縁部)にインク等によりマーキングを施して排紙手段47へ排出させ、OFF状態に切り替えられていればマーキングしないでそのまま排出させる。

【0039】このように、この実施例によれば、マーキング切替手段46がジョブ区切り判定手段45によってジョブの区切りと判定される毎にマーキング手段43に

8

よるマーキング動作を開始あるいは停止に切り替えるので、例えば図8(黒丸によってマーキング個所を示す)に示すように画像形成済用紙の端縁部に各ジョブ毎に交互に(1ジョブおきに)マーキングが施され、そのマーキングが外から見えるのでユーザによる仕分け作業が容易になる。また、マーキング手段43以外はソフトウェアで実現できるので、装置を低コストで且つ小規模にすることができる。さらに、機構が単純なため誤動作が少ない安定したものにできる。

10 【0040】図9はこの発明の第3実施例の構成を機能的に示すブロックであり、図7と対応する部分には同一符号を付している。この実施例において、マーキング位置変更手段48は、ジョブ区切り判定手段45によってジョブの区切りと判定される毎にマーキング手段43によるマーキング位置を変更する。

20 【0041】したがって、例えば図10に示すように画像形成済用紙の端縁部に各ジョブ毎に異なる位置にマーキングが施され、そのマーキングが外から見えるのでユーザによる仕分け作業が一層容易になる。また、第2実施例と同様な理由から装置を低コストで且つ小規模にでき、さらに機構が単純なため誤動作が少ない安定したものにできる。

【0042】図11はこの発明の第4実施例の構成を機能的に示すブロックであり、図7と対応する部分には同一符号を付している。この実施例において、マーキングカラー変更手段49は、ジョブ区切り判定手段45によってジョブの区切りと判定される毎にマーキング手段43によるマーキングカラーを変更する。

30 【0043】したがって、例えば図12(赤、青と印された箇所はそれぞれマーキングが赤色、青色でなされていることを示す)に示すように、画像形成済用紙の端縁部に各ジョブ毎に少なくとも隣接するジョブと異なる色でマーキングが施され、それが外から見えるので、排紙されるカット紙の積み重ねが多少乱れても仕分けが容易になる。また、第2、第3実施例と同様に装置を低コストで且つ小規模にでき、さらに機構が単純なため誤動作が少ない安定したものにできる。

40 【0044】図13はこの発明の第5実施例の構成を機能的に示すブロックであり、図7と対応する部分には同一符号を付している。この実施例において、マーカ太さ変更手段50は、ジョブ区切り判定手段45によってジョブの区切りと判定される毎にマーキング手段43によってマーキングされるマーカの太さを変更する。

【0045】したがって、例えば図14に示すように画像形成済用紙の端縁部に各ジョブ毎に太さの異なるマーキングが施され、それが外から見えるので、第4実施例と同様の効果を得ることができる。なお、ここでは図示を省略するが、ジョブの区切り毎にマーキング手段43によるマーキング本数を変更する手段を設けてもよい。

50 【0046】図15はこの発明の第6実施例の構成を機

能的に示すブロックであり、図7と対応する部分には同一符号を付している。この実施例において、ジョブ仕分け手段51a, 51b, …51nとしては、前述の各実施例で説明したマーキング手段とマーキング切替手段、マーキング位置変更手段、マーキングカラー変更手段、マーカ太さ変更手段、あるいはマーキング本数変更手段との組み合わせや、ソータやジョブセパレータ等がある。

【0047】なお、各々のジョブ仕分け手段51a, 51b, …51nが直列に並んでいるのは便宜的なもので時系列的な意味を示すものではなく、いずれかの手段が毎回選択されて機能する事を意味する。また、その中には例えばマーキング手段43を共有しているものなどがあって厳密には常に分離独立しているとは限らない。それら複数のジョブ仕分け手段51a, 51b, …51nは、ジョブ区切り判定手段45に従属する仕分け方式選択手段52によって仕分け変更のトリガ入力制御されている。

【0048】ここで、「特定数居時間のプリンタアイドル状態の継続」と「複数のホストに接続できるシステムの場合におけるデータ供給ホストの切替え」の各ジョブ区切り要因に対応するジョブ仕分け手段をそれぞれジョブ仕分け手段51aと51bとする。そして、ジョブ仕分け手段51aがマーキング位置変更手段とマーキング手段とを組み合わせた機能を、ジョブ仕分け手段51bがマーキングカラー切替手段とマーキング手段とを組み合わせた機能をそれぞれ有するものとする。

【0049】まず、ジョブ区切り判定手段45が特定数居時間のプリンタアイドル状態の継続を検知すると、その検知結果を仕分け方式選択手段52に伝え、仕分け方式選択手段52がその検知結果によりジョブ仕分け手段51aを選択し、ジョブ仕分け手段51aにマーキング位置を変更させる。すなわち、以前のマーキング位置からある単位ずらした位置にマーキングを行なわせる。

【0050】その後、ジョブ区切り判定手段45がデータ供給ホストの変更を検知すると、その検知結果を仕分け方式選択手段52に伝え、仕分け方式手段52がその検知結果によりジョブ仕分け手段51bを選択し、ジョブ仕分け手段51bにマーキングカラーを変更させる。

【0051】このように、この実施例によれば、複数の仕分け手段を複数のジョブ区切り要因に対応させて利用することで、複数のジョブ区切り要因のうち特定のジョブ区切り要因による仕分けが速やかに区別してまとめられるように、複数のジョブ仕分け手段を効果的に階層化しながら利用できる。したがって、例えば図16に示すように、ホスト1aとホスト1bのジョブによる画像形成済用紙の端縁部には異なる色（赤と青）のマーキングが施され、さらにその各ジョブ毎にそのマーキングの位置が異なるため、ホスト毎の出力やその内でのジョブ単位毎の出力を簡単に区別でき、画像形成後のユーザによる仕分けの作業性が飛躍的に向上する。

【0052】

【発明の効果】以上説明したように、この発明によれば、画像形成装置のコストアップや資源のムダ使いをすることなく、各ジョブの画像形成済用紙の仕分けを簡単に行なうことができる。

【図面の簡単な説明】

【図1】この発明の第1実施例による印刷出力例を示す説明図である。

【図2】この発明をレーザプリンタに適用した第1実施例のシステム構成図である。

【図3】図2のプリンタコントローラ3の構成例を示すブロック図である。

【図4】図3の各ホストインタフェースとRAMとの関係を示す概念図である。

【図5】図4のフレームバッファ33上に作成したビットマップデータを順方向に出力するモードと逆方向に出力するモードについて説明するための説明図である。

【図6】図3のCPU20によるこの発明に係わる処理を示すフロー図である。

【図7】この発明の第2実施例の構成を機能的に示すブロック図である。

【図8】同じくその印刷出力例を示す説明図である。

【図9】この発明の第3実施例の構成を機能的に示すブロック図である。

【図10】同じくその印刷出力例を示す説明図である。

【図11】この発明の第4実施例の構成を機能的に示すブロック図である。

【図12】同じくその印刷出力例を示す説明図である。

【図13】この発明の第5実施例の構成を機能的に示すブロック図である。

【図14】同じくその印刷出力例を示す説明図である。

【図15】この発明の第6実施例の構成を機能的に示すブロック図である。

【図16】同じくその印刷出力例を示す説明図である。

【符号の説明】

1a, 1b, …1n ホストシステム 2 レーザプリンタ  
3 プリンタコントローラ 4 プリンタエンジン  
20 CPU 21 ROM  
22 RAM 30 インพุットバッファ  
32 ページバッファ 33 フレームバッファ  
34 フォントファイル 35 ページ属性ファイル  
43 マーキング手段 45 ジョブ区切り判定手段  
46 マーキング切替手段 48 マーキング位置変更手段



11

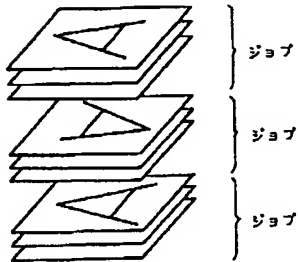
12

49 マーキングカラー変更手段  
さ変更手段

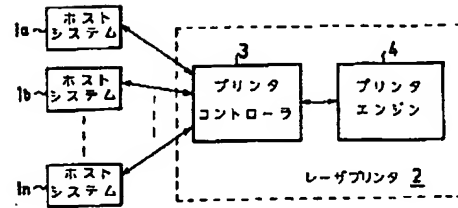
50 マーカ太

51a, 51b, ... 51n ジョブ仕分け手段 52  
仕分け方式選択手段

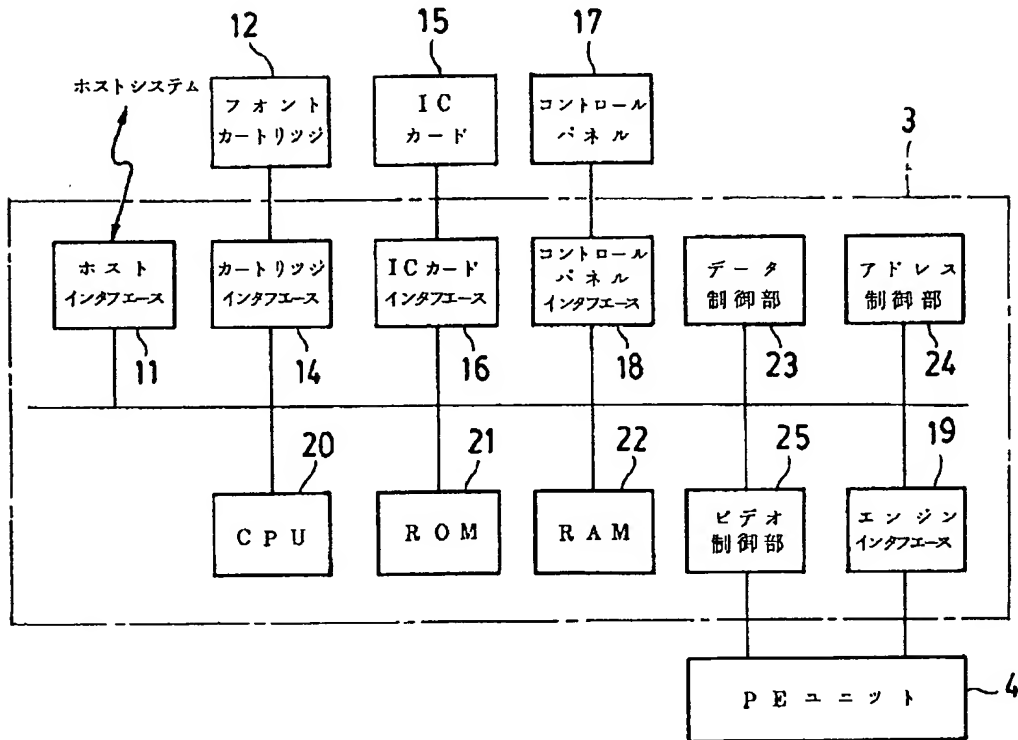
【図1】



【図2】

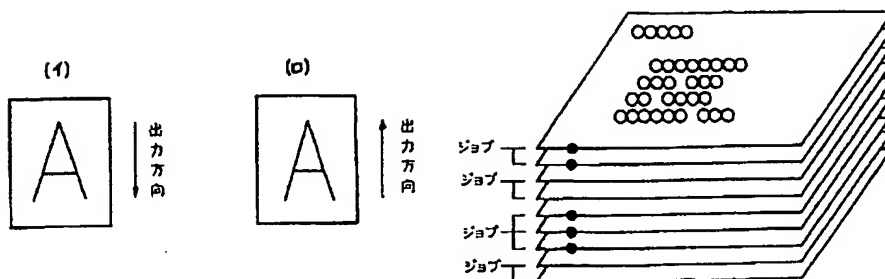


【図3】



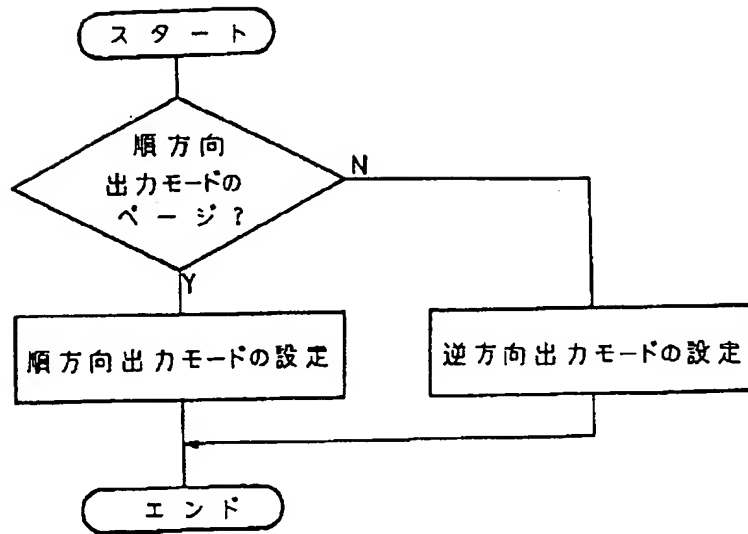
【図5】

【図8】

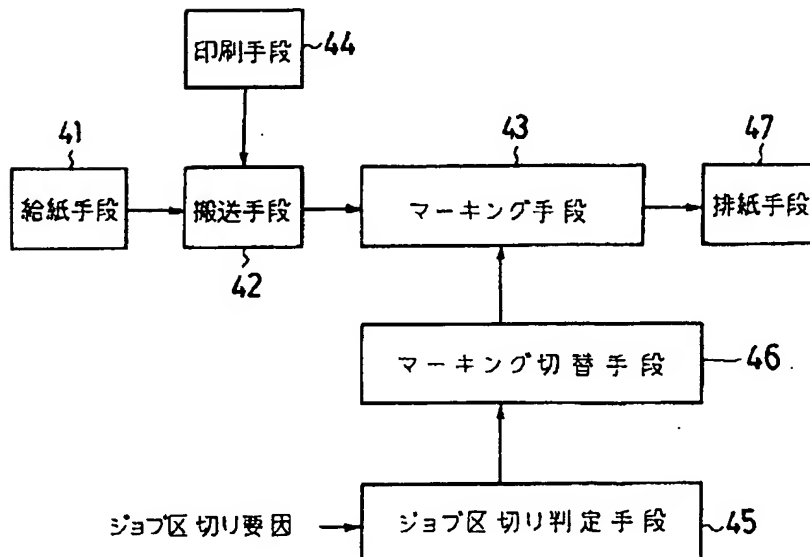


[illegible]

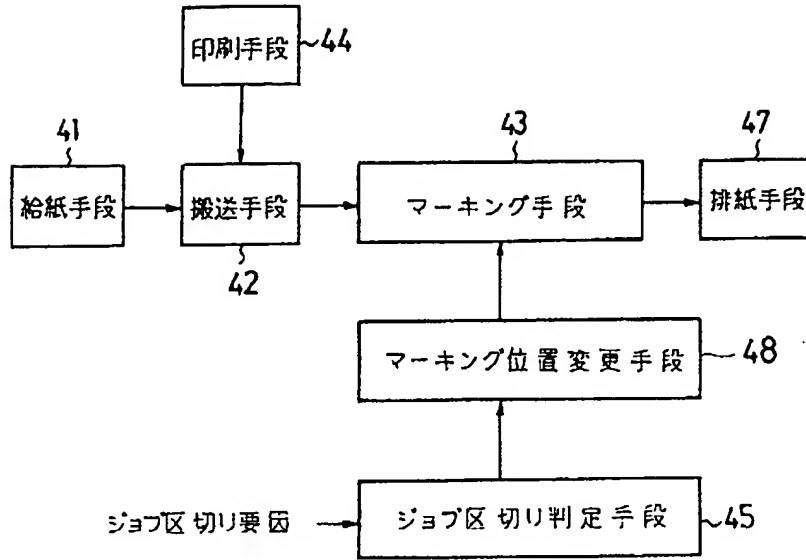
【図6】



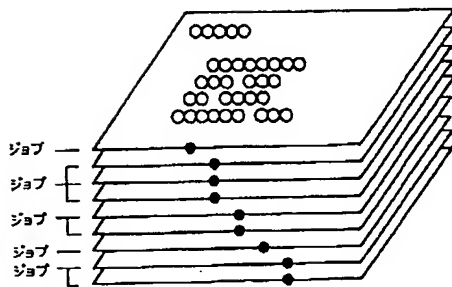
【図7】



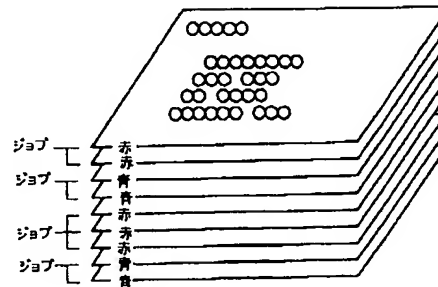
【図9】



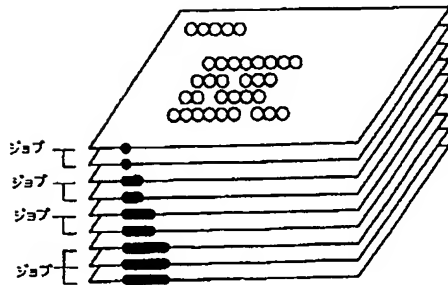
【図10】



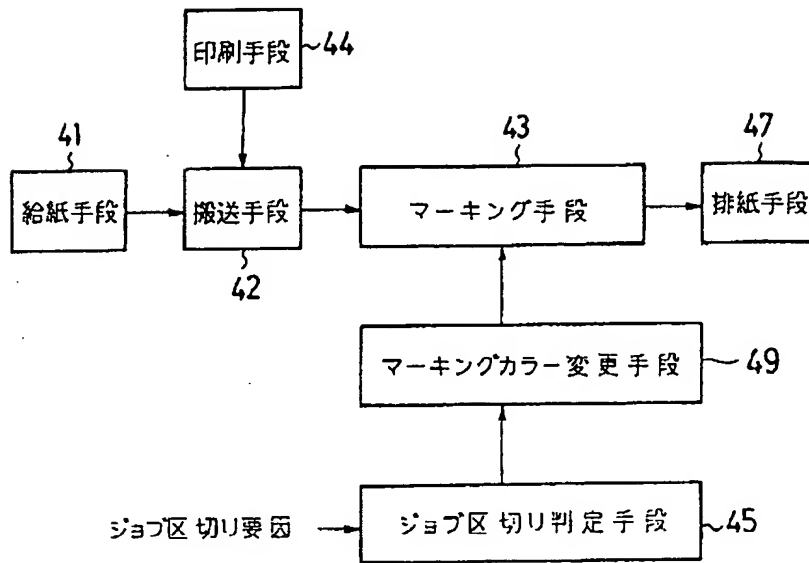
【図12】



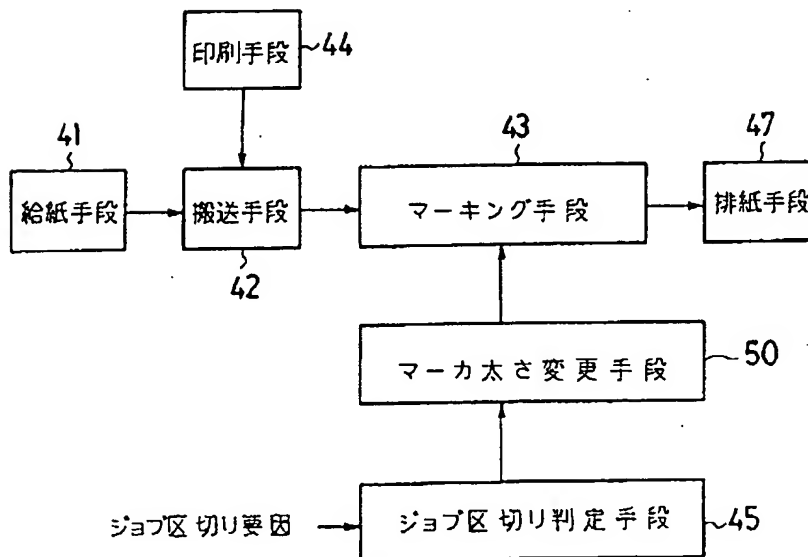
【図14】



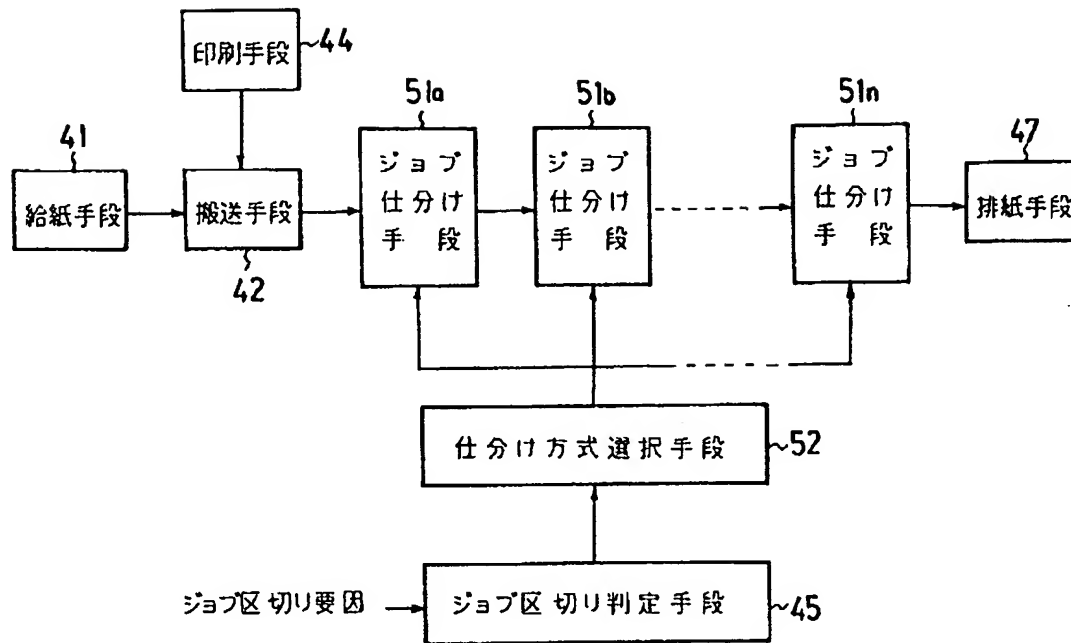
【図11】



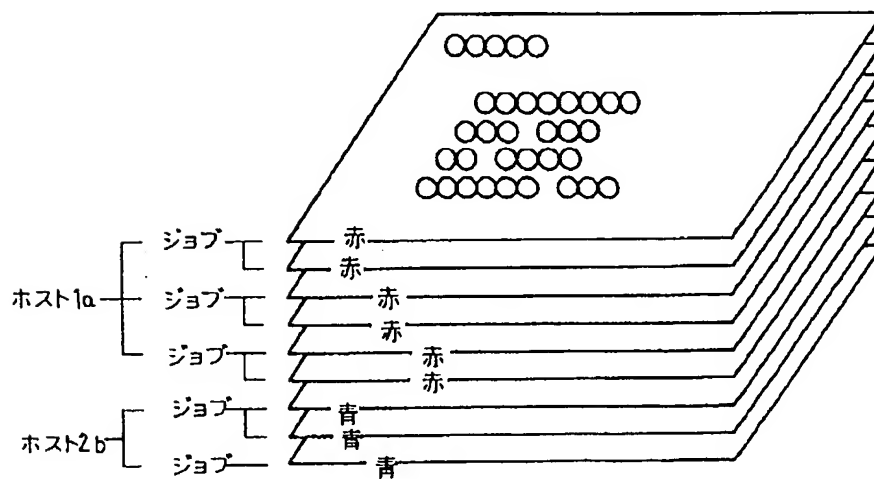
【図13】



【図15】



【図16】



フロントページの続き

(51)Int. Cl.<sup>5</sup>

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技術表示箇所

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CLAIMS

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[Claim(s)]

[Claim 1] Image formation equipment characterized by having a detection means to detect the termination of each job which is received from a host, and which should be carried out image formation, and a means to reverse the direction of the data which carry out a printout whenever this means detects termination of a job.

[Claim 2] Image formation equipment characterized by to have the marking means which carries out marking to some forms with which image formation ended in the image formation equipment which carries out image formation to a cut sheet, a job break judging means judge the break of the job which should be carried out image formation, and the marking change means which changes the marking actuation by said marking means to initiation or a halt whenever it is judged with the break of a job by this means.

[Claim 3] Image formation equipment characterized by having the marking means which carries out marking to some forms with which image formation ended in the image formation equipment which carries out image formation to a cut sheet, a job break judging means to judge the break of the job which should be carried out image formation, and a marking repositioning means to change the marking location by said marking means whenever it is judged with the break of a job by this means.

[Claim 4] Image formation equipment characterized by having the marking means which carries out marking to some forms with which image formation ended in the image formation equipment which carries out image formation to a cut sheet, a job break judging means to judge the break of the job which should be carried out image formation, and a marking color modification means to change the marking color by said marking means whenever it is judged with the break of a job by this means.

[Claim 5] Image formation equipment characterized by having a means to change a marker's size by which marking is carried out with said marking means, or the number of marking whenever it was judged with the break of a job by the marking means which carries out marking to some forms with which image formation ended in the image formation equipment which carries out image formation to a cut sheet, job break judging means to judge the break of the job which should be carried out image formation, and this means.

[Claim 6] Two or more sorts of job classification means, and a job break judging means to judge the break of the job which should be carried out image formation, A job break factor discernment means to identify two or more sorts of job break factors which this means uses for a judgment, Whenever it is judged with the break of a job by said job break judging means Image formation equipment characterized by having a job classification selection means to choose the job classification means corresponding to said job break factor identified by said job break factor discernment means among the job classification means of a seed, and to operate it. [ two or more ]

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to image formation equipments, such as various printers, such as a laser beam printer, a copying machine, and facsimile apparatus.

[0002]

[Description of the Prior Art] Although the thing which should form and carry out image formation of two or more paper output tray equipment (multistage delivery equipment) and jogger equipment in image formation equipments, such as a laser beam printer, and which changes a delivery location for every job and enabled it to classify each of that job is generally known Since there was a fault, such as causing enlargement and a cost rise of equipment by forming two or more paper output tray equipment and jogger equipment, the proposal as shown in the following (1) - (4) in order to cancel it for example, is made.

[0003] (1) It has a means to detect that the printing result output of a job was completed, and whenever termination of the printing result output of each job is detected by this detection means, insert a non-printed form (JP,2-48363,A).

(2) In the system constituted so that n hosts and m printer equipments might be connected mutually and the data from a host might be printed, generate the classification mark information (marking data) which shows the connection root of a host and a printer, and print with printing data (JP,62-169227,A).

[0004] (3) Go to the offset valve position according to the input from two or more host I/F direct with the conveyance direction, and move the printout section (delivery unit) to it (JP,2-19913,A).

(4) Change the direction of feeding-and-discarding paper alternately 90 every direction according to the change of classification (JP,2-95873,A).

[0005]

[Problem(s) to be Solved by the Invention] However, there were the following problems with image formation equipment which was mentioned to above-mentioned (1) - (4).

[0006] With the image formation equipment of (1), in order to insert a form between each job, when a 1-page job continues as those of a resource with useless value, and an extreme example, it will actually be hard coming to carry out classification, and a throughput will also fall.

With the image formation equipment of (2), only classification about the path of image formation equipment can be performed with a host. Moreover, it is difficult to be hard to distinguish from other information that classification mark information was printed, and to print the classification mark information at the end of paper, and when it piles up, a classification mark cannot be seen, since the printing method is the same.

[0007] When a loading condition is broken down with the image formation equipment of (3), it is meaningless and is weak to a wind or vibration. Moreover, cost starts structurally and a delivery unit migration tooth space is too much needed. Furthermore, since classification spacing tends to be influenced by the error of a classification location, it is hard to classify finely.

in every direction with the image formation equipment of (4) -- a printing means printable in each



direction and the printing direction selection means according to the feed direction are required, and especially former software or a former hard configuration becomes complicated.

[0008] It aims at enabling it to classify each job image formation finishing form simply, without making this invention in view of the above-mentioned point, and acting as the useless usage of a cost rise and resource of image formation equipment.

[0009]

[Means for Solving the Problem] This invention offers image formation equipment equipped with a detection means to detect the termination of each job which is received from a host and which should be carried out image formation, and a means to reverse the direction of the data which carry out a printout whenever this means detects termination of a job in order to attain the above-mentioned purpose.

[0010] Moreover, in the image formation equipment which carries out image formation to a cut sheet, image formation equipment equipped with the marking means which carries out marking to some forms with which image formation ended, a job break judging means to judge the break of the job which should be carried out image formation, and the marking change means which changes the marking actuation by the marking means to initiation or a halt whenever it is judged with the break of a job by this means is also offered.

[0011] In addition, you may have either of the following (1) - (3) instead of a marking change means.

(1) A marking repositioning means to change the marking location by the marking means whenever it is judged with the break of a job by the job break judging means.

(2) A marking color modification means to change the marking color by the marking means whenever it is judged with the break of a job by the job break judging means.

(3) A means to change a marker's size by which marking is carried out with a marking means, or the number of marking whenever it is judged with the break of a job by the job break judging means.

[0012] Furthermore, two or more sorts of job classification means and a job break judging means to judge the break of the job which should be carried out image formation, A job break factor discernment means to identify two or more sorts of job break factors which this means uses for a judgment, Whenever it is judged with the break of a job by the job break judging means Image formation equipment equipped with a job classification selection means to choose the job classification means corresponding to the job break factor identified by the job break factor discernment means among two or more sorts of job classification means, and to operate it is also offered.

[0013]

[Function] Each job can be classified without acting as the useless usage of a cost rise or the resource, even when there are only a medium tray and one paper output tray at a time since according to the image formation equipment of claim 1 the direction of the data which carry out a printout is reversed whenever it detects the termination of each job which is received from a host and which should be carried out image formation.

[0014] Since the marking actuation by the marking means is changed to initiation or a halt whenever it judges the break of the job which should be carried out image formation according to the image formation equipment of claim 2, the form by which marking was carried out for every job, and the form by which marking is not carried out lap by turns, and classification of each job can be too realized by low cost. If especially marking is performed to a part of edge of a form, it glances, also after the form of each job has lapped, and can distinguish. In addition, if the marking location by the marking means is changed whenever it is judged with the break of a job by the job break judging means, the classification activity by the user after image formation will become still easier.

[0015] Moreover, if a marking color is changed whenever it is judged with the break of a job by the job break judging means, even if the pile of the cut sheet to which paper is delivered is confused, classification is known clearly. Furthermore, whenever it is judged with the break of a job by the job break judging means, even when a marker's size by which marking is carried out with a marking means, or the number of marking is changed, the same effectiveness as \*\*\*\* can be acquired.

[0016] Since the job classification means corresponding to the job break factor identified among two or more sorts of job classification means is chosen and is operated whenever according to the image

formation equipment of claim 6 a job break judging means identifies two or more sorts of job break factors used for a judgment and is judged by the job break judging means to be the break of a job, the workability of classification by the user after image formation improves by leaps and bounds.

[0017]

[Example] Hereafter, the example of this invention is concretely explained based on a drawing. Drawing 2 is the system configuration Fig. of the 1st example which applied this invention to the laser beam printer, 1a, 1b, --1n are host systems different, respectively, such as a personal computer which is an external device, a word processor, a data processor, and an image processing system, and 2 is a laser beam printer which are each of those host systems 1a and 1b and a page printer which connected --1n.

[0018] The laser beam printer 2 is constituted by the printer controller 3 which generates a video data per page in response to printing data, such as character code information and image image information, from host systems 1a and 1b and --1n either, and the printer engine 4 which consists of the image formation section, a sequence controller, etc. (engine driver) for printing an alphabetic character and an image on a form (record medium) by the video data.

[0019] Drawing 3 is the block diagram showing the example of a configuration of this printer controller 3. The host interface 11 for connecting this printer controller 3 with the host systems 1a and 1b shown in drawing 2 as an external interface (interface circuitry), and --1n, As an internal interface (interface circuitry) The control panel interface 18 and PE unit for connecting with the IC card interface 16 for connecting with the cartridge interface 14 for connecting with a font cartridge 12, and IC card 15, and a control panel (control panel) 17 (Printer engine) In order to connect with 4, it has the engine interface 19.

[0020] Moreover, it has CPU20, ROM21, RAM22, and the data control section 23, the address control section 24 and the video control section 25 as the controller section. In addition, the host interface 11 is constituted by two or more host interfaces 11a and 11b which have the communication facility for connecting each host systems 1a and 1b and --1n, --11n as shown in drawing 4, and according to each host system which connects, a selection setup of various kinds of parallel interfaces or serial interface etc. is carried out.

[0021] And this host interface 11 receives various kinds of printing data, such as character code information from a host system, and image image information, or transmits control information, such as the printer status, to a host system. Moreover, each part in this printer controller 3 is mutually connected by the bus line which consists of an address bus, a control bus, and a data bus.

[0022] CPU20 is a general-purpose microcomputer (16 bits or 32 bits) which consists of CPU, ROM, RAM, I/O, etc., and manages generalization control of this whole printer controller. ROM21 is a read-only memory and stores the various programs for controlling CPU20, a resident font, etc.

[0023] RAM22 is mass random access memory, and as shown in drawing 4, all the host interfaces 11a and 11b, the input buffer 30 common to --11n, each host interfaces 11a and 11b and two or more auxiliary buffers 31a and 31b corresponding to --11n, and the memory area as --31n are assigned. Furthermore, this RAM22 is used for the system memory which CPU20 uses while it is used for a page buffer 32, a frame buffer 33, a font file 34, and page attribute file 35 grade.

[0024] Based on the data of a page buffer 32, the data control section 23 is used, when creating bit map data (video data) on the frame buffer 33. The address control section 24 is constituted by the DMA address control section which controls the DMA (Direct Memory Access) address in the case of making bit map data on a frame buffer 33 based on the data of a page buffer 32, the video address control section for synchronizing with a video clock (WCLK) the bit map data made by the frame buffer 33, and carrying out the sequential output, etc.

[0025] When [ whose bit map data made on the frame buffer 33 are the batch of CPU20 ] 32 bits is read at a time, for example, the video control section 25 changes the parallel bit map data into serial bit map data, and outputs it to the PE unit 4.

[0026] Next, according to the various buffers on RAM22 shown in drawing 4, and the configuration of a file, each processing actuation is explained concretely. If host interfaces 11a and 11b and --11n either receive data from a host system, the received data will be transmitted to the auxiliary buffer with which

RAM22 corresponds. Subsequently, CPU20 picks out data from that auxiliary buffer, storing maintenance is carried out at the input buffer 30, and adjustment with the processing data rate in this laser beam printer and the data transmitting rate from a host system is aimed at.

[0027] Next, the data currently held in the input buffer 30 are taken out, and if the data becomes character code information (a control code is included), page layout information, such as a class of alphabetic character in every character, a class of font, and a printing location on a page (X, Y coordinate), is stored in a page buffer 32.

[0028] Next, when data are stored in a page buffer 32, the above-mentioned control code and printing positional information determine the layout of the bit map data created by the frame buffer 33, batch transfer of the font according to the class of alphabetic character in above-mentioned every character and the class of font by the character code is carried out by DMA from a font file 34 according to the determined layout after that, and bit map data are generated. And the bit map data and information, such as paper size of each page registered into the page attribute file 35, are outputted to the PE unit 4, and printing actuation is made to perform.

[0029] Next, the part concerning this invention is explained. In this example, it has the mode outputted to hard flow from the last of a page as the output of the bit map data created on the frame buffer 33 is shown in the mode and (b) which are performed to the forward direction as shown in (b) of drawing 5.

[0030] First, the flag for determining this mode is prepared. And whenever it detects termination of each job which is received from a host system and which should be printed, the flag is changed so that a forward direction output or a hard flow output may be shown. On the other hand, it registers into the creation time of the page data in a page buffer 32 whether it is or the page which carries out a hard flow output which is a page which carries out a forward direction output according to the above-mentioned flag at the page attribute file 35.

[0031] And in advance of activation of printing processing, as shown in the flow chart of drawing 6, the page attribute file 35 is investigated, the page of forward direction output mode or the page of hard flow output mode is determined, and the determined mode is set up. Since the sense of an image becomes opposite for every job by it as the form by which a printout is carried out is shown in drawing 1, a subsequent classification activity can be done easily.

[0032] In addition, the case of being as follows can be considered as termination detection conditions for each job.

1) It is [0033] when the host interface by which 3 selections are made when 2 job quit command etc. is prepared when fixed time data is not received, and the command is received changes. Thus, each job can be classified easily, without acting as the useless usage of a cost rise or the resource, even when there are only a medium tray and one paper output tray at a time since according to this example the direction of the data which carry out a printout is reversed whenever it detects termination of each job which is received from a host system and which should be printed.

[0034] In addition, although it is the same and the direction of that output was changed to all pages in this example until it created bit map data, it may be made to create bit map data from hard flow.

Moreover, of course, this invention can apply other printers, such as not only a laser beam printer but a liquid crystal shutter printer, an LED printer, etc., to various kinds of image formation equipments, such as a copying machine and facsimile apparatus.

[0035] Drawing 7 is a block which shows the configuration of the 2nd example of this invention functionally. The cut sheet to which the feed means 41 fed one sheet of cut sheet of the specified size at a time, and the conveyance means 2 was fed from the feed means 41 is turned to the marking means 43, and is conveyed, and the printing means 44 forms an image in the cut sheet under the conveyance. The job break judging means 45 will tell that to the marking change means 46, if the break of the job which should detect and carry out image formation of the job break factor from inside and outside as shown for example, in the following (1) - (6) is judged.

[0036] (1) A change of the data supply host in the case of a system connectable with two or more hosts.  
(2) Modification of the printer language by the command, panel actuation, automatic recognition, etc. (emulation change).

(3) Every page, the break for every copy unit in two or more sheet copy print mode.

(4) A direct job change or directions by the command and panel about processing of the level near it.

(5) Continuation of the printer idle state of specific threshold time amount.

(6) In addition to this.

[0037] If the marking change means 46 is judged by the job break judging means 45 to be the break of a job, it will change the marking ON/OFF condition to the marking means 43 or before on the contrary.

[0038] The marking means 43 performs marking in ink etc. to a part of cut sheet (preferably edge section) which will be sent by the conveyance means 2 if it changes to ON condition with the marking change means 46 and by which image formation was carried out, is made to discharge it to the delivery means 47, and it is made to discharge as it is without carrying out marking, if it changes to the OFF condition.

[0039] Thus, the classification activity by the user since marking (every other job) is performed to the edge section of an image formation finishing form by turns for every job as it is shown, for example in drawing 8 (a black dot shows a marking part), since the marking actuation by the marking means 43 whenever the marking change means 46 is judged by the job break judging means 45 to be the break of a job according to this example is changed to initiation or a halt, and that marking is in sight from outside becomes easy. Moreover, since it is realizable with software except marking means 43, it is low cost and equipment can be made small-scale. Furthermore, since the device is simple, malfunction is possible for few stable things.

[0040] Drawing 9 is a block which shows the configuration of the 3rd example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, whenever the marking repositioning means 48 is judged by the job break judging means 45 to be the break of a job, it changes the marking location by the marking means 43.

[0041] As it follows, for example, is shown in drawing 10, marking is performed to a location which is different for every job in the edge section of an image formation finishing form, and since the marking is in sight from outside, the classification activity by the user becomes still easier. Moreover, since it is the same as that of the 2nd example, it is low cost and equipment can be made small-scale, and since the device is still simpler, malfunction is possible for few stable things.

[0042] Drawing 11 is a block which shows the configuration of the 4th example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, whenever the marking color modification means 49 is judged by the job break judging means 45 to be the break of a job, it changes the marking color by the marking means 43.

[0043] Since marking is performed by different color from the job which adjoins the edge section of an image formation finishing form at least for every job and it can be seen from outside as it follows, for example, is shown in drawing 12 (it is blue and, as for red, blue, and the inscribed part, marking shows red and that it is made, respectively), classification becomes easy even if the pile of the cut sheet to which paper is delivered is confused somewhat. Moreover, like the 2nd and 3rd example, it is low cost and can do on a small scale, and since the device is still simpler, equipment is made as for malfunction to few stable things.

[0044] Drawing 13 is a block which shows the configuration of the 5th example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, whenever the marker size modification means 50 is judged by the job break judging means 45 to be the break of a job, it changes a marker's size by which marking is carried out with the marking means 43.

[0045] Since marking from which a size differs for every job is performed to the edge section of an image formation finishing form as it follows, for example, is shown in drawing 14, and it can be seen from outside, the same effectiveness as the 4th example can be acquired. In addition, although illustration is omitted here, a means to change the marking number by the marking means 43 for every break of a job may be established.

[0046] Drawing 15 is a block which shows the configuration of the 6th example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, there are combination with a marking means, a marking change means, a marking repositioning means, a marking

color modification means, a marker size modification means, or a marking number modification means, a sorter, a job separator, etc. which were explained in each above-mentioned example as the job classification means 51a and 51b and --51n.

[0047] In addition, it means that it is expedient, serial semantics is not shown, one of means is chosen each time, and it functions that each job classification means 51a and 51b and --51n are located in a line with the serial. Moreover, there is some they which is sharing the marking means 43, and it has not always gained separate independence strictly. The trigger input of classification modification is controlled by classification method selection means 52 to be subordinate to the job break judging means 45, the job classification means 51a and 51b of these plurality, and --51n.

[0048] Here, let the job classification means corresponding to each job break factor of "continuation of the printer idle state of specific threshold time amount", and "a change of the data supply host in the case of a system connectable with two or more hosts" be the job classification means 51a and 51b, respectively. And it shall have the function with which job classification means 51b combined the marking color change means and the marking means for the function whose job classification means 51a combined the marking repositioning means and the marking means, respectively.

[0049] First, when the job break judging means 45 detects continuation of the printer idle state of specific threshold time amount, the detection result is told to the classification method selection means 52, the classification method selection means 52 chooses job classification means 51a by the detection result, and a marking location is made to change into job classification means 51a. That is, marking is made to perform in a certain location \*\*\*\*\* carried out from a former marking location.

[0050] Then, when the job break judging means 45 detects modification of a data supply host, the detection result is told to the classification method selection means 52, the classification method means 52 chooses job classification means 51b by the detection result, and a marking color is made to change into job classification means 51b.

[0051] Thus, according to this example, it can use, hierarchizing two or more job classification means effectively so that classification by the specific job break factor may distinguish promptly and may be summarized among two or more job break factors by making two or more classification means correspond to two or more job break factors, and using them. therefore -- since [ for example, ] marking of a different color (red and blue) is performed to the edge section of the image formation finishing form by the job of host 1a and host 1b and the locations of the marking differ for every job of that further, as shown in drawing 16 -- the output for every host -- among those, the output for every job unit which comes out can be distinguished easily, and the workability of classification by the user after image formation improves by leaps and bounds.

[0052]

[Effect of the Invention] The image formation finishing form of each job can be classified easily, without acting as the useless usage of the cost rise of image formation equipment, or a resource according to this invention, as explained above.

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**TECHNICAL FIELD**

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[Industrial Application] This invention relates to image formation equipments, such as various printers, such as a laser beam printer, a copying machine, and facsimile apparatus.

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PRIOR ART

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[Description of the Prior Art] Although the thing which should form and carry out image formation of two or more paper output tray equipment (multistage delivery equipment) and jogger equipment in image formation equipments, such as a laser beam printer, and which changes a delivery location for every job and enabled it to classify each of that job is generally known Since there was a fault, such as causing enlargement and a cost rise of equipment by forming two or more paper output tray equipment and jogger equipment, the proposal as shown in the following (1) - (4) in order to cancel it for example, is made.

[0003] (1) It has a means to detect that the printing result output of a job was completed, and whenever termination of the printing result output of each job is detected by this detection means, insert a non-printed form (JP,2-48363,A).

(2) In the system constituted so that n hosts and m printer equipments might be connected mutually and the data from a host might be printed, generate the classification mark information (marking data) which shows the connection root of a host and a printer, and print with printing data (JP,62-169227,A).

[0004] (3) Go to the offset valve position according to the input from two or more host I/F direct with the conveyance direction, and move the printout section (delivery unit) to it (JP,2-19913,A).

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EFFECT OF THE INVENTION

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[Effect of the Invention] The image formation finishing form of each job can be classified easily, without acting as the useless usage of the cost rise of image formation equipment, or a resource according to this invention, as explained above.

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TECHNICAL PROBLEM

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[0006] With the image formation equipment of (1), in order to insert a form between each job, when a 1-page job continues as those of a resource with useless value, and an extreme example, it will actually be hard coming to carry out classification, and a throughput will also fall.

With the image formation equipment of (2), only classification about the path of image formation equipment can be performed with a host. Moreover, it is difficult to be hard to distinguish from other information that classification mark information was printed, and to print the classification mark information at the end of paper, and when it piles up, a classification mark cannot be seen, since the printing method is the same.

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MEANS

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[Means for Solving the Problem] This invention offers image formation equipment equipped with a detection means to detect the termination of each job which is received from a host and which should be carried out image formation, and a means to reverse the direction of the data which carry out a printout whenever this means detects termination of a job in order to attain the above-mentioned purpose.

[0010] Moreover, in the image formation equipment which carries out image formation to a cut sheet, image formation equipment equipped with the marking means which carries out marking to some forms with which image formation ended, a job break judging means to judge the break of the job which should be carried out image formation, and the marking change means which changes the marking actuation by the marking means to initiation or a halt whenever it is judged with the break of a job by this means is also offered.

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(1) A marking repositioning means to change the marking location by the marking means whenever it is judged with the break of a job by the job break judging means.

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OPERATION

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[Function] Each job can be classified without acting as the useless usage of a cost rise or the resource, even when there are only a medium tray and one paper output tray at a time since according to the image formation equipment of claim 1 the direction of the data which carry out a printout is reversed whenever it detects the termination of each job which is received from a host and which should be carried out image formation.

[0014] Since the marking actuation by the marking means is changed to initiation or a halt whenever it judges the break of the job which should be carried out image formation according to the image formation equipment of claim 2, the form by which marking was carried out for every job, and the form by which marking is not carried out lap by turns, and classification of each job can be too realized by low cost. If especially marking is performed to a part of edge of a form, it glances, also after the form of each job has lapped, and can distinguish. In addition, if the marking location by the marking means is changed whenever it is judged with the break of a job by the job break judging means, the classification activity by the user after image formation will become still easier.

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[0016] Since the job classification means corresponding to the job break factor identified among two or more sorts of job classification means is chosen and is operated whenever according to the image formation equipment of claim 6 a job break judging means identifies two or more sorts of job break factors used for a judgment and is judged by the job break judging means to be the break of a job, the workability of classification by the user after image formation improves by leaps and bounds.

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EXAMPLE

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[Example] Hereafter, the example of this invention is concretely explained based on a drawing. Drawing 2 is the system configuration Fig. of the 1st example which applied this invention to the laser beam printer, 1a, 1b, --1n are host systems different, respectively, such as a personal computer which is an external device, a word processor, a data processor, and an image processing system, and 2 is a laser beam printer which are each of those host systems 1a and 1b and a page printer which connected --1n. [0018] The laser beam printer 2 is constituted by the printer controller 3 which generates a video data per page in response to printing data, such as character code information and image image information, from host systems 1a and 1b and --1n either, and the printer engine 4 which consists of the image formation section, a sequence controller, etc. (engine driver) for printing an alphabetic character and an image on a form (record medium) by the video data.

[0019] Drawing 3 is the block diagram showing the example of a configuration of this printer controller 3. The host interface 11 for connecting this printer controller 3 with the host systems 1a and 1b shown in drawing 2 as an external interface (interface circuitry), and --1n, As an internal interface (interface circuitry) The control panel interface 18 and PE unit for connecting with the IC card interface 16 for connecting with the cartridge interface 14 for connecting with a font cartridge 12, and IC card 15, and a control panel (control panel) 17 (Printer engine) In order to connect with 4, it has the engine interface 19.

[0020] Moreover, it has CPU20, ROM21, RAM22, and the data control section 23, the address control section 24 and the video control section 25 as the controller section. In addition, the host interface 11 is constituted by two or more host interfaces 11a and 11b which have the communication facility for connecting each host systems 1a and 1b and --1n, --11n as shown in drawing 4 , and according to each host system which connects, a selection setup of various kinds of parallel interfaces or serial interface etc. is carried out.

[0021] And this host interface 11 receives various kinds of printing data, such as character code information from a host system, and image image information, or transmits control information, such as the printer status, to a host system. Moreover, each part in this printer controller 3 is mutually connected by the bus line which consists of an address bus, a control bus, and a data bus.

[0022] CPU20 is a general-purpose microcomputer (16 bits or 32 bits) which consists of CPU, ROM, RAM, I/O, etc., and manages generalization control of this whole printer controller. ROM21 is a read-only memory and stores the various programs for controlling CPU20, a resident font, etc.

[0023] RAM22 is mass random access memory, and as shown in drawing 4 , all the host interfaces 11a and 11b, the input buffer 30 common to --11n, each host interfaces 11a and 11b and two or more auxiliary buffers 31a and 31b corresponding to --11n, and the memory area as --31n are assigned. Furthermore, this RAM22 is used for the system memory which CPU20 uses while it is used for a page buffer 32, a frame buffer 33, a font file 34, and page attribute file 35 grade.

[0024] Based on the data of a page buffer 32, the data control section 23 is used, when creating bit map data (video data) on the frame buffer 33. The address control section 24 is constituted by the DMA address control section which controls the DMA (Direct Memory Access) address in the case of making

bit map data on a frame buffer 33 based on the data of a page buffer 32, the video address control section for synchronizing with a video clock (WCLK) the bit map data made by the frame buffer 33, and carrying out the sequential output, etc.

[0025] When [ whose bit map data made on the frame buffer 33 are the batch of CPU20 ] 32 bits is read at a time, for example, the video control section 25 changes the parallel bit map data into serial bit map data, and outputs it to the PE unit 4.

[0026] Next, according to the various buffers on RAM22 shown in drawing 4 , and the configuration of a file, each processing actuation is explained concretely. If host interfaces 11a and 11b and --11n either receive data from a host system, the received data will be transmitted to the auxiliary buffer with which RAM22 corresponds. Subsequently, CPU20 picks out data from that auxiliary buffer, storing maintenance is carried out at the input buffer 30, and adjustment with the processing data rate in this laser beam printer and the data transmitting rate from a host system is aimed at.

[0027] Next, the data currently held in the input buffer 30 are taken out, and if the data becomes character code information (a control code is included), page layout information, such as a class of alphabetic character in every character, a class of font, and a printing location on a page (X, Y coordinate), is stored in a page buffer 32.

[0028] Next, when data are stored in a page buffer 32, the above-mentioned control code and printing positional information determine the layout of the bit map data created by the frame buffer 33, batch transfer of the font according to the class of alphabetic character in above-mentioned every character and the class of font by the character code is carried out by DMA from a font file 34 according to the determined layout after that, and bit map data are generated. And the bit map data and information, such as paper size of each page registered into the page attribute file 35, are outputted to the PE unit 4, and printing actuation is made to perform.

[0029] Next, the part concerning this invention is explained. In this example, it has the mode outputted to hard flow from the last of a page as the output of the bit map data created on the frame buffer 33 is shown in the mode and (b) which are performed to the forward direction as shown in (b) of drawing 5 .

[0030] First, the flag for determining this mode is prepared. And whenever it detects termination of each job which is received from a host system and which should be printed, the flag is changed so that a forward direction output or a hard flow output may be shown. On the other hand, it registers into the creation time of the page data in a page buffer 32 whether it is or or the page which carries out a hard flow output which is a page which carries out a forward direction output according to the above-mentioned flag at the page attribute file 35.

[0031] And in advance of activation of printing processing, as shown in the flow chart of drawing 6 , the page attribute file 35 is investigated, the page of forward direction output mode or the page of hard flow output mode is determined, and the determined mode is set up. Since the sense of an image becomes opposite for every job by it as the form by which a printout is carried out is shown in drawing 1 , a subsequent classification activity can be done easily.

[0032] In addition, the case of being as follows can be considered as termination detection conditions for each job.

1) It is [0033] when the host interface by which 3 selections are made when 2 job quit command etc. is prepared when fixed time data is not received, and the command is received changes. Thus, each job can be classified easily, without acting as the useless usage of a cost rise or the resource, even when there are only a medium tray and one paper output tray at a time since according to this example the direction of the data which carry out a printout is reversed whenever it detects termination of each job which is received from a host system and which should be printed.

[0034] In addition, although it is the same and the direction of that output was changed to all pages in this example until it created bit map data, it may be made to create bit map data from hard flow.

Moreover, of course, this invention can apply other printers, such as not only a laser beam printer but a liquid crystal shutter printer, an LED printer, etc., to various kinds of image formation equipments, such as a copying machine and facsimile apparatus.

[0035] Drawing 7 is a block which shows the configuration of the 2nd example of this invention

functionally. The cut sheet to which the feed means 41 fed one sheet of cut sheet of the specified size at a time, and the conveyance means 2 was fed from the feed means 41 is turned to the marking means 43, and is conveyed, and the printing means 44 forms an image in the cut sheet under the conveyance. The job break judging means 45 will tell that to the marking change means 46, if the break of the job which should detect and carry out image formation of the job break factor from inside and outside as shown for example, in the following (1) - (6) is judged.

[0036] (1) A change of the data supply host in the case of a system connectable with two or more hosts.

(2) Modification of the printer language by the command, panel actuation, automatic recognition, etc. (emulation change).

(3) Every page, the break for every copy unit in two or more sheet copy print mode.

(4) A direct job change or directions by the command and panel about processing of the level near it.

(5) Continuation of the printer idle state of specific threshold time amount.

(6) In addition to this.

[0037] If the marking change means 46 is judged by the job break judging means 45 to be the break of a job, it will change the marking ON/OFF condition to the marking means 43 or before on the contrary.

[0038] The marking means 43 performs marking in ink etc. to a part of cut sheet (preferably edge section) which will be sent by the conveyance means 2 if it changes to ON condition with the marking change means 46 and by which image formation was carried out, is made to discharge it to the delivery means 47, and it is made to discharge as it is without carrying out marking, if it changes to the OFF condition.

[0039] Thus, the classification activity by the user since marking (every other job) is performed to the edge section of an image formation finishing form by turns for every job as it is shown, for example in drawing 8 (a black dot shows a marking part), since the marking actuation by the marking means 43 whenever the marking change means 46 is judged by the job break judging means 45 to be the break of a job according to this example is changed to initiation or a halt, and that marking is in sight from outside becomes easy. Moreover, since it is realizable with software except marking means 43, it is low cost and equipment can be made small-scale. Furthermore, since the device is simple, malfunction is possible for few stable things.

[0040] Drawing 9 is a block which shows the configuration of the 3rd example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, whenever the marking repositioning means 48 is judged by the job break judging means 45 to be the break of a job, it changes the marking location by the marking means 43.

[0041] As it follows, for example, is shown in drawing 10, marking is performed to a location which is different for every job in the edge section of an image formation finishing form, and since the marking is in sight from outside, the classification activity by the user becomes still easier. Moreover, since it is the same as that of the 2nd example, it is low cost and equipment can be made small-scale, and since the device is still simpler, malfunction is possible for few stable things.

[0042] Drawing 11 is a block which shows the configuration of the 4th example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, whenever the marking color modification means 49 is judged by the job break judging means 45 to be the break of a job, it changes the marking color by the marking means 43.

[0043] Since marking is performed by different color from the job which adjoins the edge section of an image formation finishing form at least for every job and it can be seen from outside as it follows, for example, is shown in drawing 12 (it is blue and, as for red, blue, and the inscribed part, marking shows red and that it is made, respectively), classification becomes easy even if the pile of the cut sheet to which paper is delivered is confused somewhat. Moreover, like the 2nd and 3rd example, it is low cost and can do on a small scale, and since the device is still simpler, equipment is made as for malfunction to few stable things.

[0044] Drawing 13 is a block which shows the configuration of the 5th example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, whenever the marker size modification means 50 is judged by the job break judging means 45 to be the break of a

job, it changes a marker's size by which marking is carried out with the marking means 43.

[0045] Since marking from which a size differs for every job is performed to the edge section of an image formation finishing form as it follows, for example, is shown in drawing 14, and it can be seen from outside, the same effectiveness as the 4th example can be acquired. In addition, although illustration is omitted here, a means to change the marking number by the marking means 43 for every break of a job may be established.

[0046] Drawing 15 is a block which shows the configuration of the 6th example of this invention functionally, and gives the same sign to drawing 7 and a corresponding part. In this example, there are combination with a marking means, a marking change means, a marking repositioning means, a marking color modification means, a marker size modification means, or a marking number modification means, a sorter, a job separator, etc. which were explained in each above-mentioned example as the job classification means 51a and 51b and --51n.

[0047] In addition, it means that it is expedient, serial semantics is not shown, one of means is chosen each time, and it functions that each job classification means 51a and 51b and --51n are located in a line with the serial. Moreover, there is some they which is sharing the marking means 43, and it has not always gained separate independence strictly. The trigger input of classification modification is controlled by classification method selection means 52 to be subordinate to the job break judging means 45, the job classification means 51a and 51b of these plurality, and --51n.

[0048] Here, let the job classification means corresponding to each job break factor of "continuation of the printer idle state of specific threshold time amount", and "a change of the data supply host in the case of a system connectable with two or more hosts" be the job classification means 51a and 51b, respectively. And it shall have the function with which job classification means 51b combined the marking color change means and the marking means for the function whose job classification means 51a combined the marking repositioning means and the marking means, respectively.

[0049] First, when the job break judging means 45 detects continuation of the printer idle state of specific threshold time amount, the detection result is told to the classification method selection means 52, the classification method selection means 52 chooses job classification means 51a by the detection result, and a marking location is made to change into job classification means 51a. That is, marking is made to perform in a certain location \*\*\*\*\* carried out from a former marking location.

[0050] Then, when the job break judging means 45 detects modification of a data supply host, the detection result is told to the classification method selection means 52, the classification method means 52 chooses job classification means 51b by the detection result, and a marking color is made to change into job classification means 51b.

[0051] Thus, according to this example, it can use, hierarchizing two or more job classification means effectively so that classification by the specific job break factor may distinguish promptly and may be summarized among two or more job break factors by making two or more classification means correspond to two or more job break factors, and using them. therefore -- since [ for example, ] marking of a different color (red and blue) is performed to the edge section of the image formation finishing form by the job of host 1a and host 1b and the locations of the marking differ for every job of that further, as shown in drawing 16 -- the output for every host -- among those, the output for every job unit which comes out can be distinguished easily, and the workability of classification by the user after image formation improves by leaps and bounds.

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[Translation done.]

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3. In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**


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**[Brief Description of the Drawings]**

**[Drawing 1]** It is the explanatory view showing the example of a printout by the 1st example of this invention.

**[Drawing 2]** It is the system configuration Fig. of the 1st example which applied this invention to the laser beam printer.

**[Drawing 3]** It is the block diagram showing the example of a configuration of the printer controller 3 of drawing 2.

**[Drawing 4]** It is the conceptual diagram showing the relation between each host interface of drawing 3, and RAM.

**[Drawing 5]** It is an explanatory view for explaining the mode which outputs the bit map data created on the frame buffer 33 of drawing 4 to the forward direction, and the mode outputted to hard flow.

**[Drawing 6]** It is the flow Fig. showing the processing concerning this invention by CPU20 of drawing 3.

**[Drawing 7]** It is the block diagram showing the configuration of the 2nd example of this invention functionally.

**[Drawing 8]** It is the explanatory view showing the example of a printout similarly.

**[Drawing 9]** It is the block diagram showing the configuration of the 3rd example of this invention functionally.

**[Drawing 10]** It is the explanatory view showing the example of a printout similarly.

**[Drawing 11]** It is the block diagram showing the configuration of the 4th example of this invention functionally.

**[Drawing 12]** It is the explanatory view showing the example of a printout similarly.

**[Drawing 13]** It is the block diagram showing the configuration of the 5th example of this invention functionally.

**[Drawing 14]** It is the explanatory view showing the example of a printout similarly.

**[Drawing 15]** It is the block diagram showing the configuration of the 6th example of this invention functionally.

**[Drawing 16]** It is the explanatory view showing the example of a printout similarly.

**[Description of Notations]**

1a, 1b, --1n Host system 2 Laser beam printer

3 Printer Controller 4 Printer Engine

20 CPU 21 ROM

22 RAM 30 Input Buffer

32 Page Buffer 33 Frame Buffer

34 Font File 35 Page Attribute File

43 Marking Means 45 Job Break Judging Means

46 Marking Change Means 48 Marking Repositioning Means

49 Marking Color Modification Means 50 Marker Size Modification Means



51a, 51b, --51n Job classification means 52 Classification method selection means

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[Translation done.]

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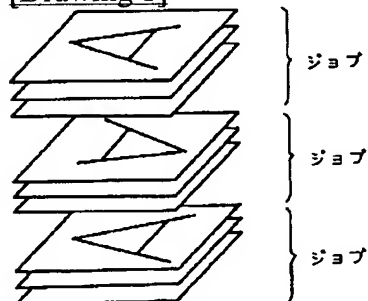
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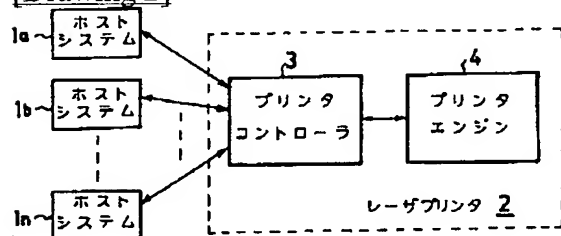
DRAWINGS

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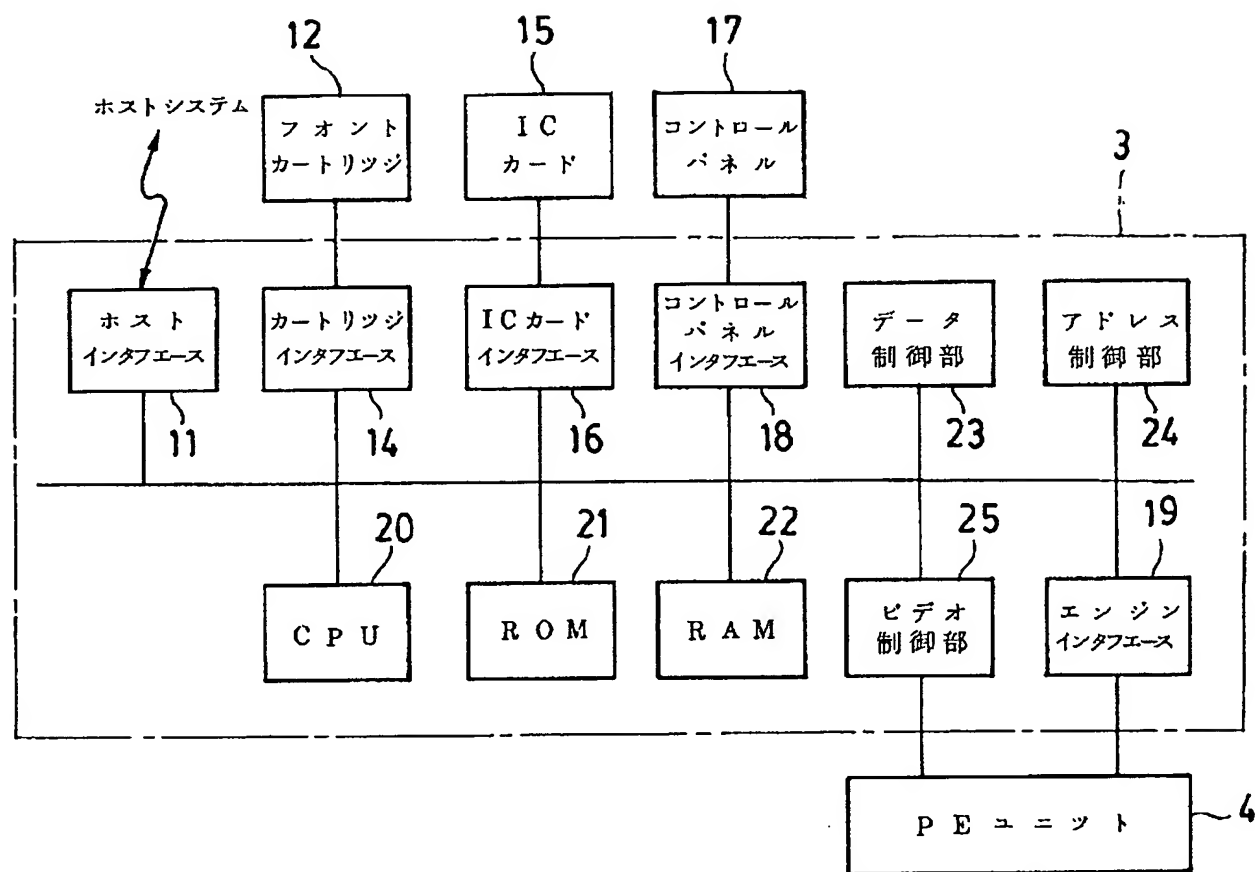
[Drawing 1]



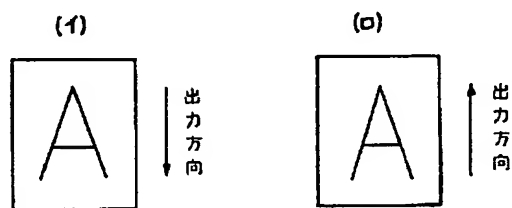
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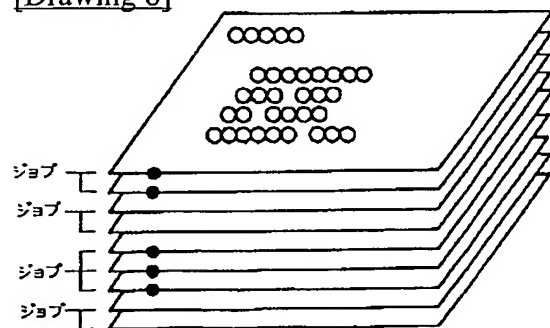
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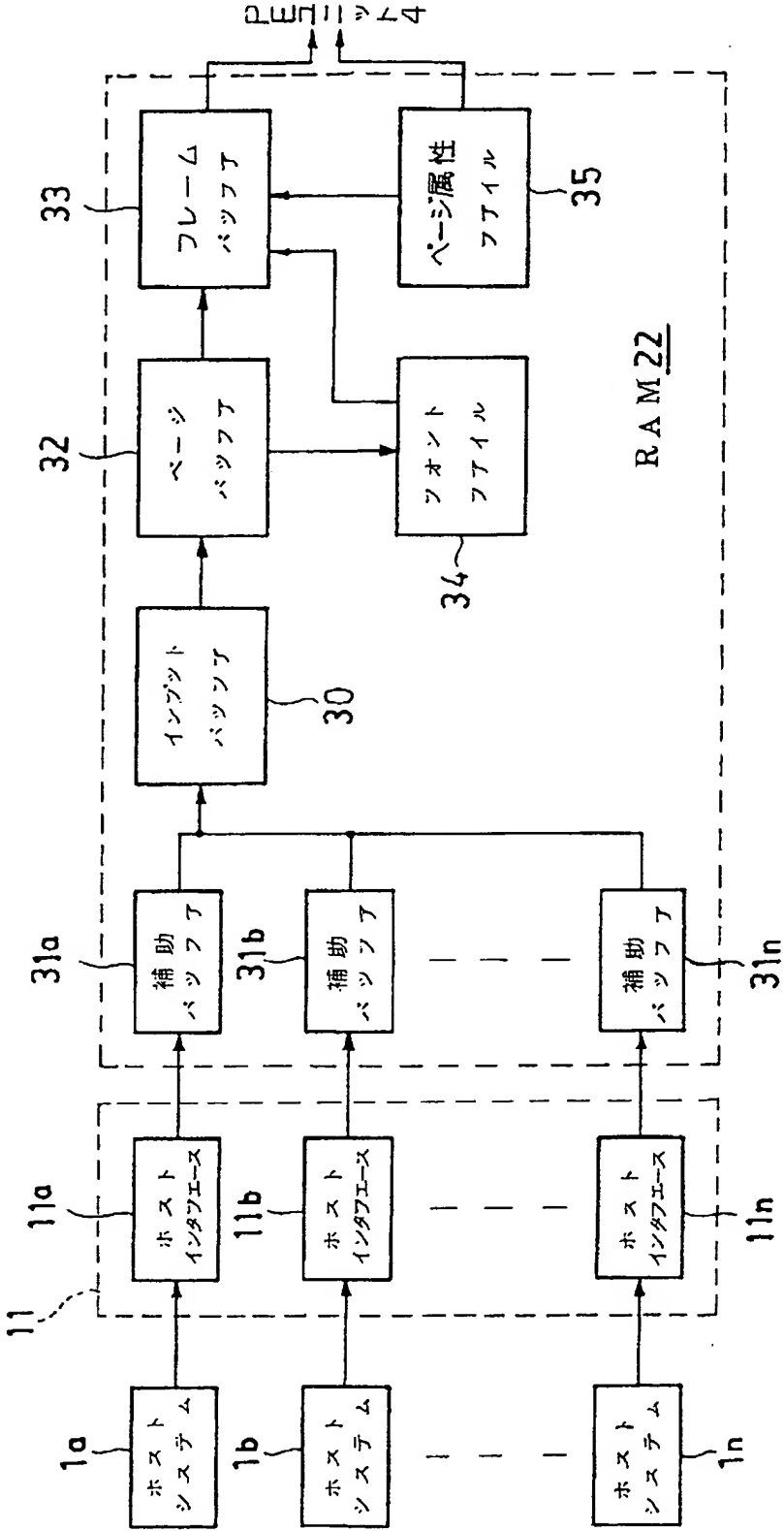
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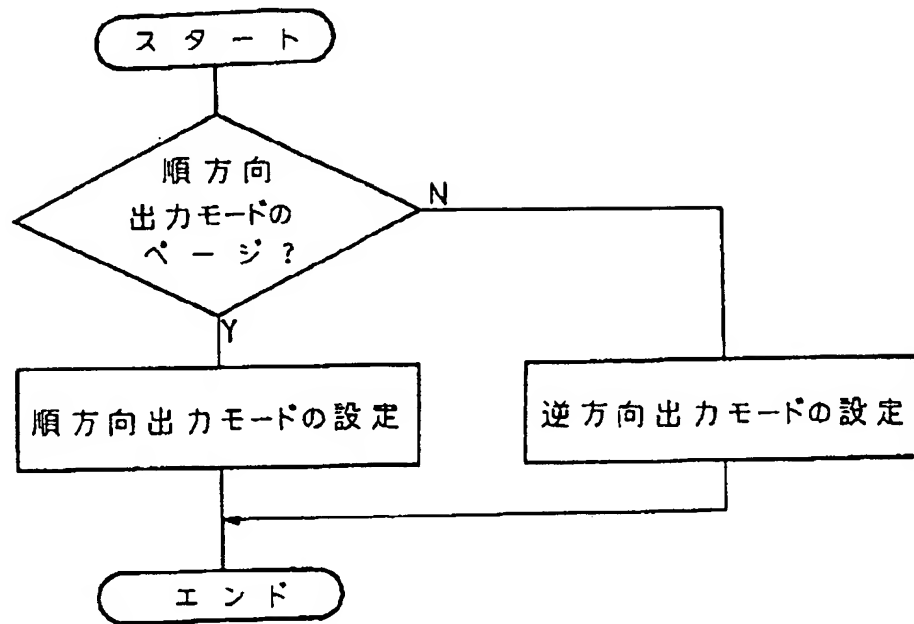
[Drawing 8]



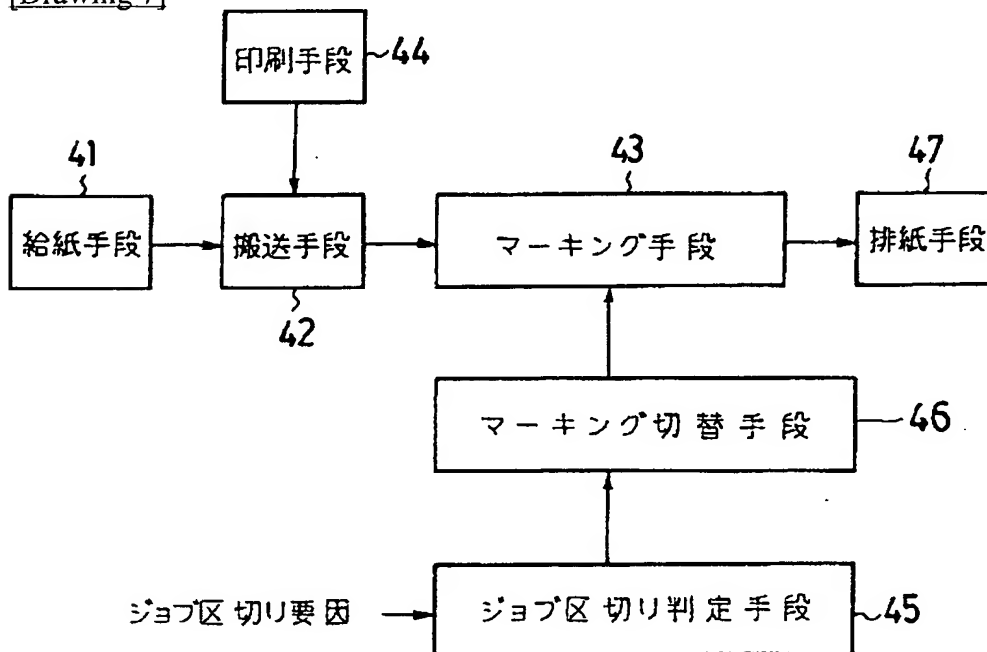
[Drawing 4]



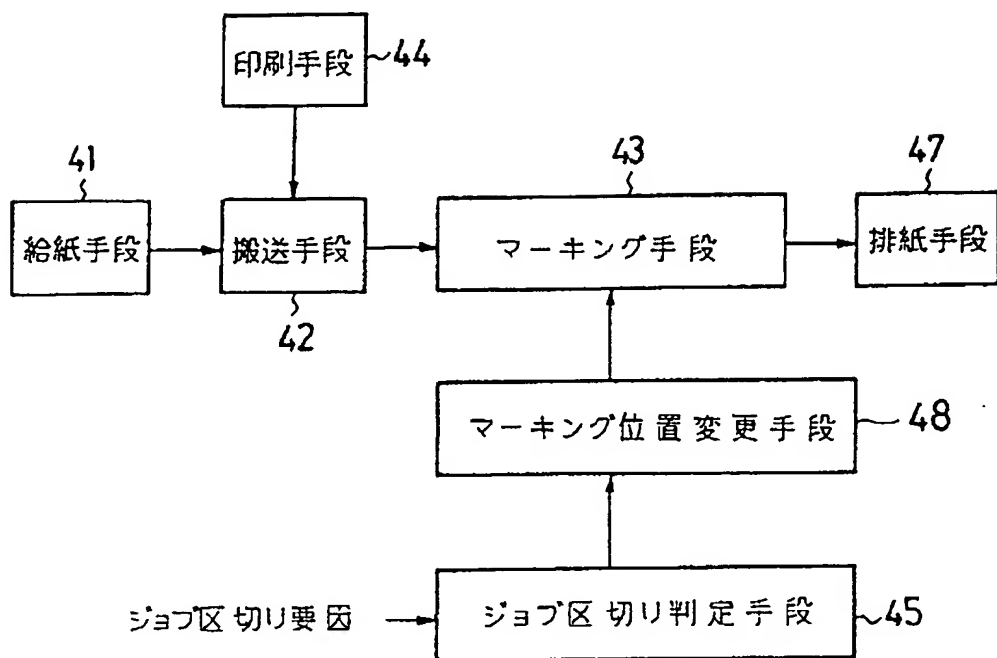
[Drawing 6]



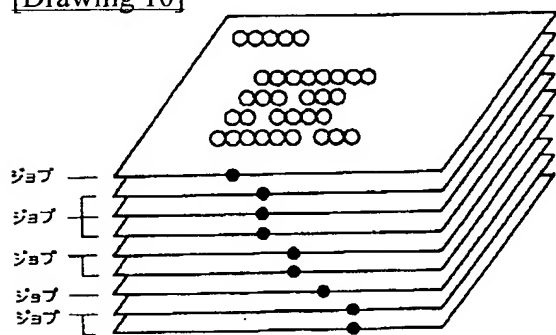
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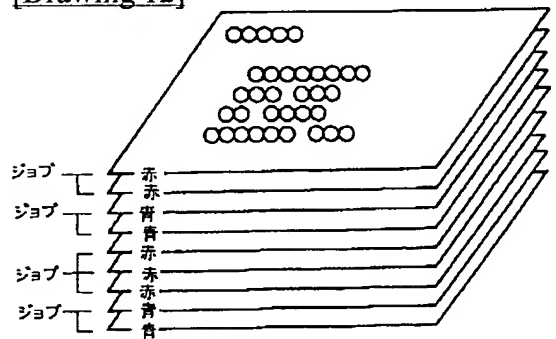
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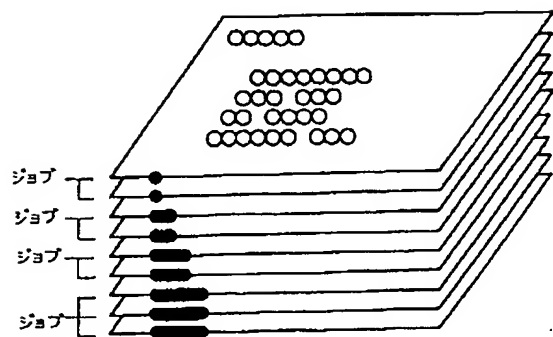
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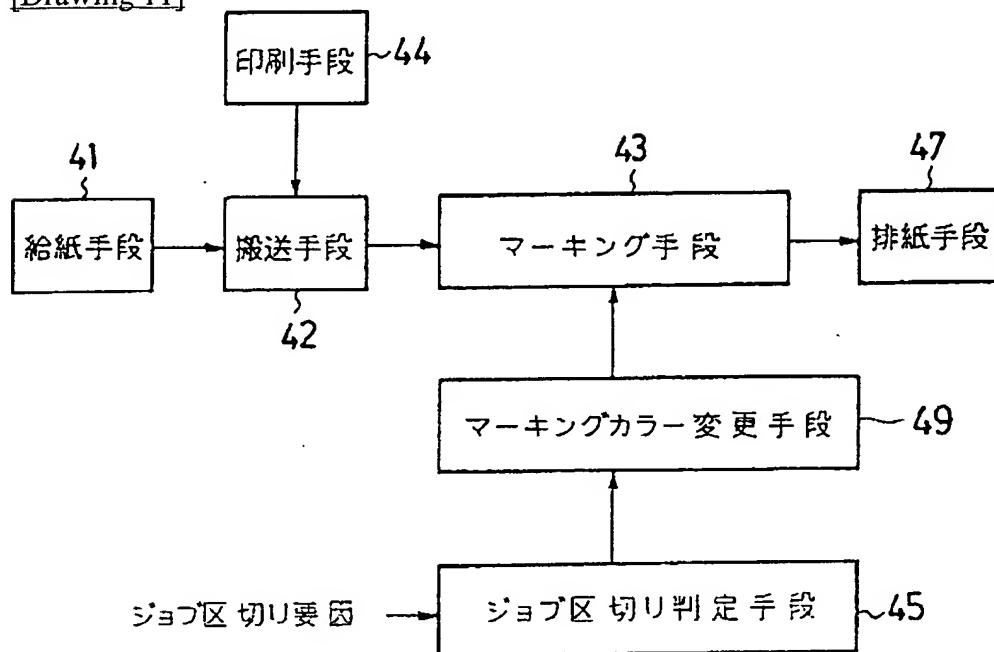
[Drawing 12]



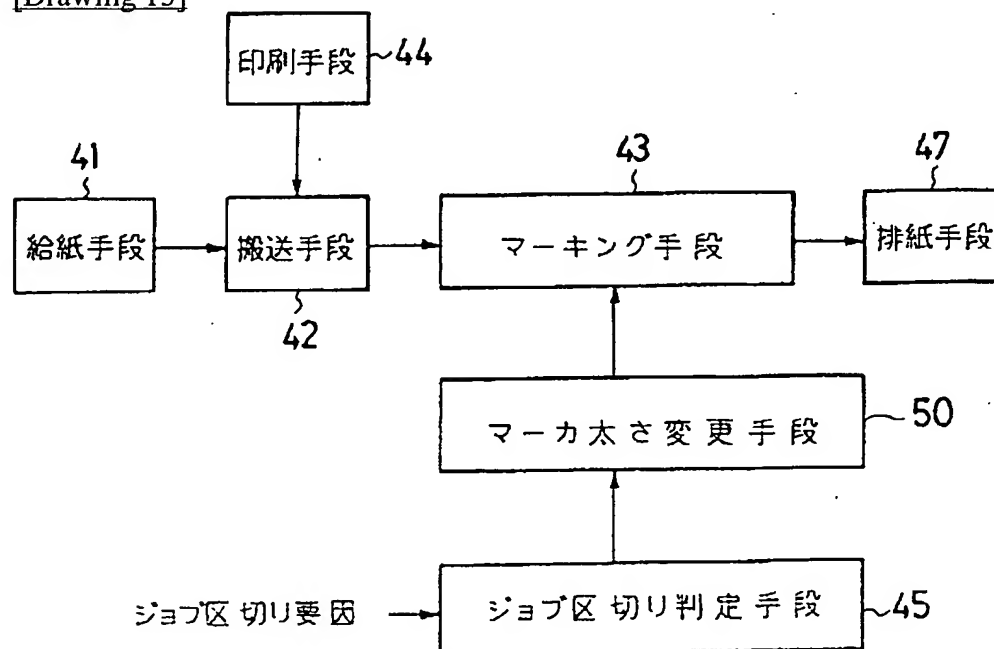
[Drawing 14]



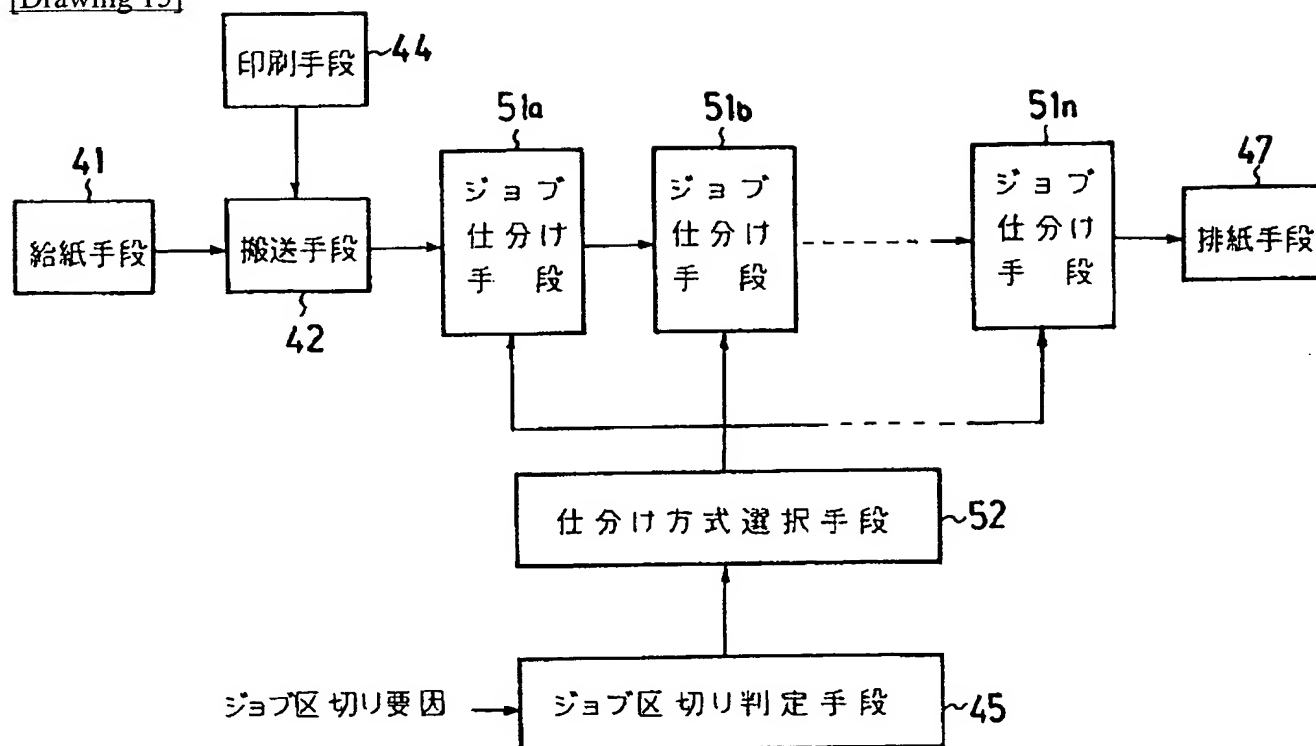
[Drawing 11]



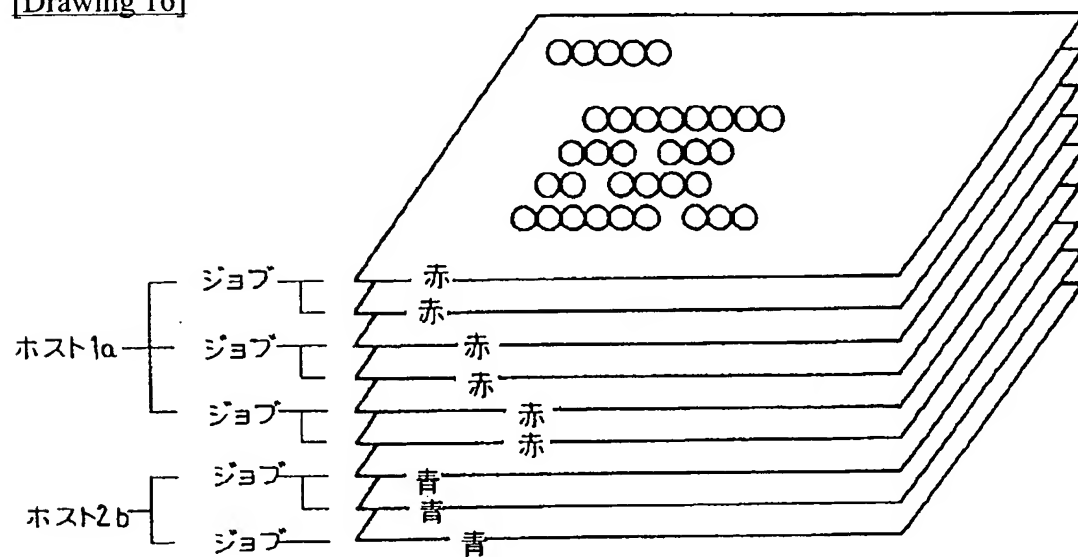
[Drawing 13]



[Drawing 15]



[Drawing 16]



[Translation done.]